

## **Town of Norman Wells Spill Contingency Plan**

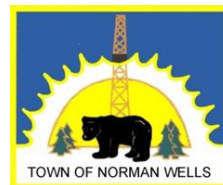
August 22, 2018

Prepared for:

Town of Norman Wells

Prepared by:

Stantec Consulting Ltd.  
Yellowknife, NT



Project Number:  
144930099

## Revision History and Conformity Table

The Plan should be updated annually, at a minimum, to reflect any changes in personnel, operation activities, storage locations of hazardous materials, and other conditions as applicable.

Revision	Description	Author	Approved By
August 2018	Original Plan (Revision 0)	Stantec Consulting Ltd.	Town of Norman Wells



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## Executive Summary

This Spill Contingency Plan (SCP, the Plan) is intended to provide a framework for staff at the Town of Norman Wells (Norman Wells) for responding to spills in everyday and worst-case situations at its municipal facilities, specifically the Wastewater Treatment System (Sewage Lagoon), Water Treatment Facility (WTF) and Solid Waste Disposal Facility (SWDF). The SCP identifies key response personnel and their roles and responsibilities in the event of a spill, as well as the equipment and resources available for immediate response. The SCP provides directions in effort to protect life, minimize injuries, use available resources effectively, minimize environmental effects, and complete essential reporting.

This Plan has been developed for Norman Wells' municipal facilities to comply with the mandatory requirements outlined in Part F of their Water Licence (No. S07L3-002), issued by the Sahtu Land and Water Board (SLWB), and to comply with the territorial *Environmental Protection Act* (R.R.N.W.T. 1990, c.).

The community of Norman Wells (65° 17' N and 126° 50' W) is located in the Sahtu region of the Northwest Territories (NT) on the east bank of the Mackenzie River. It is approximately 685 km northwest of Yellowknife, NT. The current population of Norman Wells is estimated at 803 residents (in 2016) and is expected to decrease over the next two decades.

This SCP will be used by Norman Wells to support the performance of municipal activities including the operation and maintenance of water treatment and distribution at the WTF, operation of sewage disposal and treatment at the Sewage Lagoon, and operation of solid waste collection and disposal at the SWDF. Materials stored at the WTF, Sewage Lagoon, and SWDF that could be accidentally released were inventoried in June 2018 and are summarized in this SCP. The material inventory should be updated annually.

"An immediately reportable spill is defined as a release of a substance that is likely to be an imminent hazard to human health and/or the environment or meets or exceeds the reportable quantities. These spills MUST be reported to the NWT 24-hour Spill Report Line at (867) 920-8130" (MVLWB 2018). This SCP identifies staff responsible for activating this Plan at each municipal facility and emergency contact numbers in the community to assist with spill response activities.

This Plan outlines step-by-step procedures for spill response, action plans for various spill situations (e.g., general spills, sewage spills, hazardous material spills), spill containment methods, managing spill-related waste, restoring affected areas, resources available for responding to spills, and training of staff at municipal facilities.



## Glossary and Acronyms

AST	Above-ground Storage Tank
Clarification	<i>"Methods to help particles settle out after they are stuck together"</i> (MVLWB 2018)
Coagulation and flocculation	<i>"A chemical that is added to the water to make particles of dirt stick together and sink"</i> (MVLWB 2018)
cm	centimetre
ENR	Environment and Natural Resources
Filtration	<i>"Filters use methods to trap particles and remove them from the water"</i> (MVLWB 2018)
GNWT	Government of the Northwest Territories
Hazardous Waste	<i>"a waste which, because of its quantity, concentration, or characteristics, may be harmful to human health or the environment when improperly treated, stored, transported, or disposed"</i> (MVLB 2011)
HDPE	High-Density Polyethylene
km	kilometre
m <sup>3</sup>	cubic metre
m	metre
MACA	Municipal and Community Affairs
mm	millimetre
MVLWB	Mackenzie Valley Land and Water Board
NT	Northwest Territories
SAO	Senior Administrative Officer
SCP	Spill Contingency Plan
SLWB	Sahtu Land and Water Board
SWDF	Solid Waste Disposal Facility
WTF	Water Treatment Facility



## TOWN OF NORMAN WELLS SPILL CONTINGENCY PLAN

Introduction  
August 22, 2018

### 1.0 INTRODUCTION

This Spill Contingency Plan (SCP, the Plan) is intended to provide a framework for staff at the Town of Norman Wells (Norman Wells) for responding to spills in everyday and worst-case situations at its municipal facilities, including the Wastewater Treatment System (Sewage Lagoon), Water Treatment Facility (WTF) and Solid Waste Disposal Facility (SWDF). The SCP identifies key response personnel and their roles and responsibilities in the event of a spill, as well as the equipment and resources available for immediate response. The SCP also provides directions in effort to protect life, minimize injuries, use available resources effectively, minimize environmental effects, and complete essential reporting.

This Plan has been developed for the operation of Norman Wells' municipal facilities, as listed previously, to comply with the mandatory requirements outlined in Part F of their Water Licence (No. S07L3-002), issued by the Sahtu Land and Water Board (SLWB), and to comply with the territorial *Environmental Protection Act* (R.R.N.W.T. 1990, c.).

The content of this Plan is based on the March 2018 document *Operation and Maintenance Plan Template for Municipal Licenses: Spill Contingency Plan* developed by the Mackenzie Valley Land and Water Board (MVLWB) and the Government of the Northwest Territories (GNWT). Table 1-1 illustrates where each section of the specified template is addressed.

**Table 1-1 Cross-reference between the MVLWB/GNWT (2018) Plan Template and the Norman Wells Spill Contingency Plan**

Required Sections from the MVLWB/GNWT (2018) Plan template supplied by the SLWB	Corresponding Sections in this Plan
Site & Systems Description	2.0 and 2.1
<b>Spill Contingency Plan</b>	
SCP-Introduction	1.0
SCP-Revisions	Revision History and Conformity Table
SCP-Purpose	1.0
SCP-Contact information & Responsibilities	3.1
SCP-Off-site resources	3.3
SCP-Emergency phone & radio locations	3.1
SCP-Distribution & storage of spill contingency plan	1.2
SCP-Community environmental policy	1.1
SCP-Potential spills materials inventory	2.2
SCP-Response flow chart	3.2
SCP-Action plan	4.0 to 4.7
SCP-Resource inventory	4.1
SCP-Training	5.0



## TOWN OF NORMAN WELLS SPILL CONTINGENCY PLAN

Introduction  
August 22, 2018

### 1.1 COMMUNITY ENVIRONMENTAL POLICY

Norman Wells is committed to operating its municipal facilities in an environmentally sensitive manner and complying with the requirements of its Water Licence. It is the policy of Norman Wells to:

- Comply with existing regulations including the territorial *Environmental Protection Act* and regulations
- Provide environmental protection as it is technically feasible and economically practical
- Cooperate with other groups regarding environmental protection
- Keep employees, government officials, and the general public informed about environmental protection methods

### 1.2 DISTRIBUTION LIST AND LOCATION OF THE SPILL CONTINGENCY PLAN

A copy of this SCP will be kept in Norman Wells' Town Office, in the WTF and at the SWDF. The SCP has been formally distributed to the offices outlined in Table 1-2.

**Table 1-2 Distribution List of the Norman Wells Spill Contingency Plan**

Office Name	Contact Information
Sahtu Land and Water Board	Box 1 Fort Good Hope, NT X0E-0H0 Phone: (867) 598-2413 Fax: (867) 598-2325
Sahtu Health and Social Services Authority	27 Mackenzie Drive 2 <sup>nd</sup> Floor, Heritage Hotel P.O Box 340 Norman Wells, NT X0E-0V0 Phone: (867) 587-3650 Fax: (867) 587-3436
GNWT Department of Municipal and Community Affairs (MACA)—Sahtu Office	P.O Box 70 #3 Town Square Norman Wells, NT X0E-0V0 Phone: (867) 587-7100 Fax: (867) 587-2044





## 2.0 SITE DESCRIPTION

The community of Norman Wells (65° 17' N and 126° 50' W) is located in the Sahtu region of the Northwest Territories (NT) on the east bank of the Mackenzie River (Figure 2-1). It is approximately 685 km northwest of Yellowknife, NT. Based on the 1981 to 2010 Canadian Climate Normals, the average annual precipitation in Norman Wells is 294.4 millimetres (mm), including 171.7 mm as rain and 161.5 centimetres (cm) as snow (Government of Canada 2018). As outlined in Table 2-1, the average daily temperature for January is -26.1°C (the coldest month) and July is 17.1°C (the warmest month; Government of Canada 2018).

**Table 2-1 Climate for Norman Wells, NT (Government of Canada 2018)**

Month	Average Daily Temperature (°C)	Precipitation (mm)
January	-26.1	15.6
February	-24.0	14.9
March	-18.4	10.7
April	-5.1	11.1
May	6.4	19.0
June	15.0	42.7
July	17.1	41.8
August	13.8	41.8
September	6.6	33.1
October	-4.7	26.7
November	-18.7	18.7
December	-23.4	18.2

In 2016, the population of Norman Wells was estimated at 803 residents representing less than two percent of the population of the Northwest Territories (GNWT 2018). The population growth of Norman Wells was estimated at -0.3% per year between 2004 and 2016, and the decline is anticipated to continue through to 2035. The population projections for Norman Wells are presented Table 2-2 (GNWT 2018).

**Table 2-2 Population Projection for Norman Wells, NT (GNWT 2018)**

Year	Population
2016	803
2020	803
2025	795
2030	795
2035	796



## TOWN OF NORMAN WELLS SPILL CONTINGENCY PLAN

Site Description  
August 22, 2018

The community of Norman Wells is located within the Norman Range low subarctic ecoregion of the Taiga Plains ecozone. As described for the ecoregion by the Ecological Classification Group (2009), the geology of this ecoregion consists of dolomite and limestone bedrock overlain by fine to medium textured tills. Brunisolic and Luvisolic soils are most common in the Norman Wells area. Vegetation is dominated by trembling aspen, paper birch and spruce (white and black). Norman Wells is also located in a zone of extensive discontinuous permafrost with 50 to 90% ice content (Natural Resources Canada 1993). The active layer thickness ranges from 0.5 to 2 metres (m) below ground surface (UMA Engineering Ltd 2008).





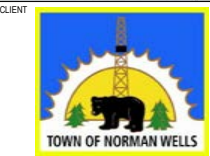


LEGEND:

— FACILITY LOCATION BOUNDARY

- GENERAL NOTES:
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Scale: 1: 10 000 (metres)



Solid Waste Disposal Facility Operation and Maintenance Plan					
NORMAN WELLS MUNICIPALITIES					
PROJECT No. 144930099	OFFICE YK	DES GM	ORD GM	REV 0	DRAWING FIGURE 2-1
DATE: JULY 2018	SHEET No. 2 of 2	DWN JUN	APP -	STATUS 0	



## **2.1 FACILITIES DESCRIPTION**

This SCP will be used by Norman Wells to support the performance of municipal activities including the operation and maintenance of water treatment and distribution at the WTF, the operation of sewage disposal and treatment at the Sewage Lagoon, and the operation of solid waste collection and disposal at the SWDF. The locations of the WTF, Sewage Lagoon, and SWDF are shown on Figure 2-1.

### **2.1.1 Sewage Lagoon**

The wastewater treatment system in Norman Wells consists of a wastewater conveyance system for sewage collection (e.g., piping, sewage haul trucks), and an engineered Sewage Lagoon at Seepage Lake for the treatment of sewage (Figure 2-1). Seepage Lake is located approximately 1 km north of the town centre and initially was a natural wetland that was converted to an engineered Sewage Lagoon in 1987. Seepage Lake is a bermed lake lagoon (retention cell) with two primary treatment cells and a retention berm at its east end (Stantec 2018). The Sewage Lagoon has an estimated volume of 153,000 m<sup>3</sup>. Most (70%) of the wastewater is transported to the Sewage Lagoon via the municipal piped sewer system (above grade and buried piping) and the remainder of the wastewater is transported via a trucking system. The piped sewer system is illustrated on Figure 2-2.

### **2.1.2 Water Treatment Facility**

The water treatment and distribution system in Norman Wells consists of a raw water intake, WTF and reservoir, and the water distribution system (Stantec 2018; see Figure 2-3). Norman Wells uses the Mackenzie River as its primary raw water source. A gravity-fed wetwell is used as the intake to withdraw raw water from the Mackenzie River. Water is piped from the intake to the WTF. The Norman Wells WTF was commissioned in 1992 and is located within the town centre; the reservoir is adjacent to the WTF (Figure 2-3). Various processes are used for treating water prior to its distribution in Norman Wells, including pre-treatment, coagulation, flocculation, clarification, filtration, and disinfection. The chemicals used in the water treatment process are stored at the WTF. Waste generated during the water treatment process at the WTF is discharged to the Sewage Lagoon via the piped municipal sewer system.

From the WTF, treated water is stored in a 930 m<sup>3</sup> reservoir that was built in 2008. Most (70%) of the treated water is distributed via a piped system (above-grade and buried piping) and the remainder of the treated water is distributed with trucks (Stantec 2018).

### **2.1.3 Solid Waste Disposal Facility**

Norman Wells' SWDF is located approximately 5 km northeast of the town centre (Figure 2-1). The SWDF is divided in an active landfill cell area (with three active phases) and eight sorting areas for bulky waste disposal, including: scrap metal and vehicles (cars, trucks, tanker trucks and transport trailers), above-ground storage tanks (ASTs) and ATCO trailers, compressed gas cylinders, tires, furniture, appliances, wood debris, and temporary hazardous waste areas. See Figure 2-4 for an overview of the SWDF.



## TOWN OF NORMAN WELLS SPILL CONTINGENCY PLAN

Site Description  
August 22, 2018

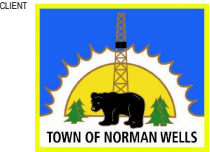
The Norman Wells SWDF accepts only two types of hazardous waste: asbestos and vehicles. However, there are currently other types of hazardous waste stored at the SWDF, that have accumulated over time, and is a legacy from unauthorized disposal by residents and local businesses. There are six sorting areas that contain hazardous waste: vehicles and scrap metal, ASTs and ATCO trailers, compressed gas cylinders, and three temporary hazardous waste areas. The temporary hazardous waste sorting areas are bermed and lined with a high-density polyethylene liner.





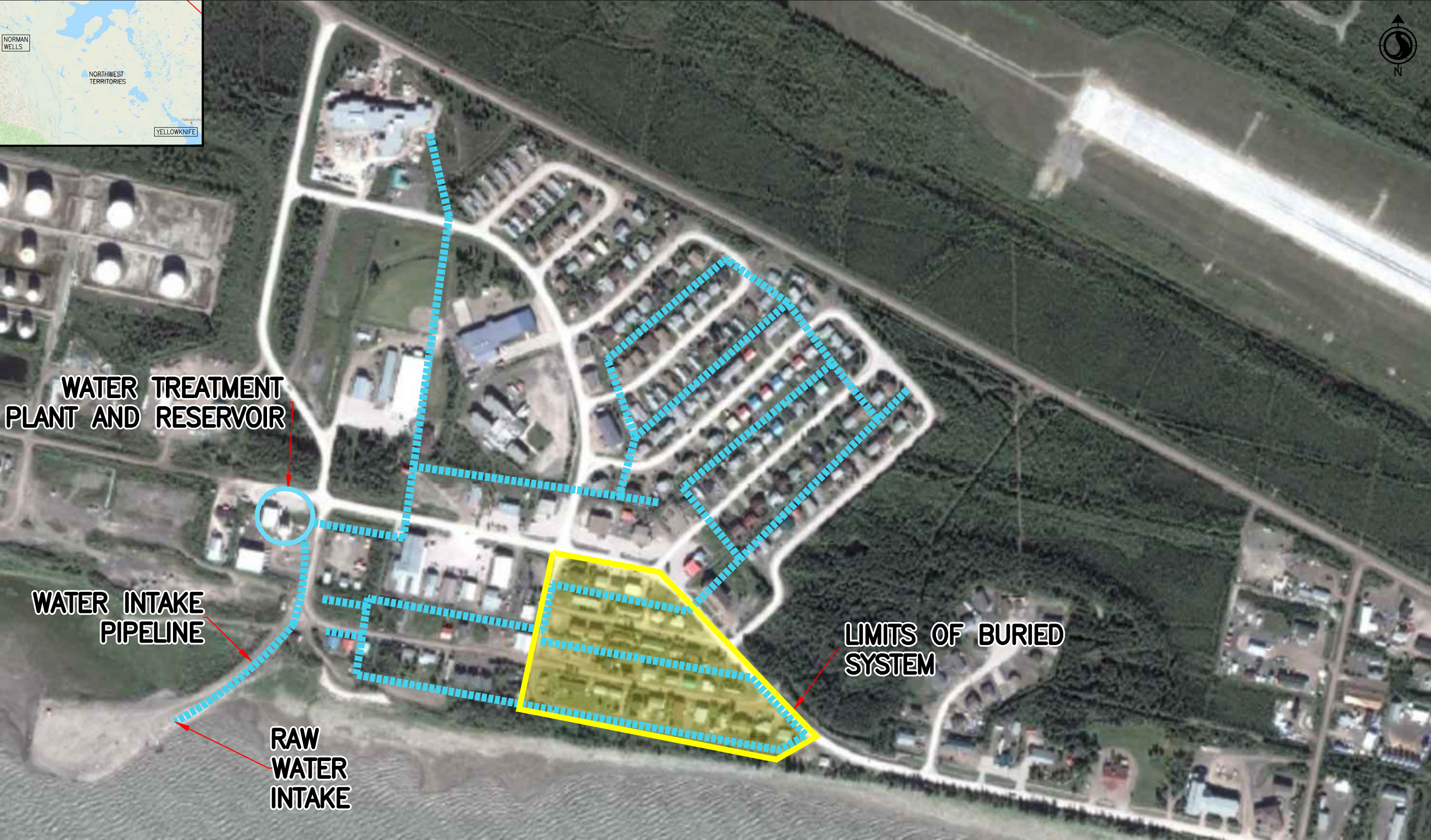
- LEGEND:
- DECANT STRUCTURE LOCATIONS
  - SEWER LINE
  - SEWAGE LIFT STATION

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Sewerage Disposal Facility and Buried Sewer System					
PROJECT No.	OFFICE	DES	OKD	REV	DRAWING
144930099	YK	GM	GM	0	FIGURE 2-2
DATE:	SHEET No.	DWN	APP	STATUS	
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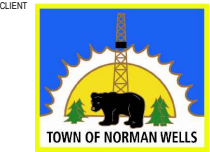


LEGEND:

--- WATER LINE

○ WATER TREATMENT PLANT

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Water Treatment Facility

WATER TREATMENT AND DISTRIBUTION SYSTEM

PROJECT No. 144930099	OFFICE YK	DES GM	OKD GM	REV 0	DRAWING FIGURE 2-3
DATE: JULY 2018	SHEET No. 2 of 2	DWN JN	APP -	STATUS 0	





Google™ earth

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## LEGEND

- |   |                            |
|---|----------------------------|
| ① TIRES   | ⑥ APPLIANCES               |
| ② TEMPORARY HAZARDOUS AREA (LINED AND BERMED) - WOODEN GRATES OF UNKNOWN MATERIAL                     | ⑦ WOOD                     |
| ③ TEMPORARY HAZARDOUS AREA (LINED AND BERMED) - DRUMS, PAINT, SUSPECTED WASTE OIL TOTES               | ⑧ COMPRESSED GAS CYLINDERS |
| ④ TEMPORARY HAZARDOUS AREA (LINED AND BERMED) - LEAD-ACID BATTERIES, DRUMS, UNKNOWN MATERIAL IN TOTES | ⑨ AST'S AND ATCO TRAILERS  |
| ⑤ FURNITURE   | ⑩ SCRAP METAL AND VEHICLES |

 BOUNDARY

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## Spill Contingency Plan

### SORTING AREA AT THE NORMAN WELLS SWDF



PROJECT No. 144930104	OFFICE YK	DES EB	CKD CH	REV 0	DRAWING  <b>FIGURE 2-4</b>
DATE: JULY 2018	SHEET No. 1 of 1	DWN JN	APP -	STATUS 0	

FIGURE 2-4



## TOWN OF NORMAN WELLS SPILL CONTINGENCY PLAN

Site Description  
August 22, 2018

### 2.2 MATERIALS INVENTORY

Table 2-3 outlines materials stored at the WTF, Sewage Lagoon, and SWDF that have the potential to spill or cause a spill. This inventory was completed in June 2018 and should be updated annually, at a minimum. There is no normal or maximum quantity of materials stored at the municipal facilities.

**Table 2-3 Potential Spill Materials Inventory**

Material	Containment		Quantity On-Site in June 2018 (m³)	Comments
	Primary	Secondary		
Water Treatment Facility				
12% sodium hypochlorite (liquid)	drum	none	1.4	Used in the disinfection during the water treatment process
Aluminum sulfate (powder)	Bag	Wooden crate	~3	Used in the coagulation and flocculation during the water treatment process
Heating Fuel	AST—doubled walled		50	AST for heating the WTF and water reservoir
Household chemicals	Chemical container	cabinet	~ 0.7	
Sewage Lagoon				
Sewage	Sewage Lagoon		unknown	
Solid Waste Disposal Facility				
Asbestos-containing material	None		None	Buried in the active Phase of the SWDF
ASTs and compressed gas cylinders	Cylinder	Cylinder	170	
Lead-acid batteries	Wooden pallets, or plastic 1,000 L tote	Wooden pallets, or plastic 1,000 L tote	6	
Mixed oil and paint	Pails, totes or drums	Pails, totes or drums	180	
Mixed plastic and metal	205 L drums	205 L drums	400	
Paint cans	Wooden crates or KBL metal containers	Wooden crates or KBL metal containers	8	
Vehicles/ASTs/Buildings	None		None	4,500 m² of 3 m average height
Unknown	Wooden crates	Wooden crates	15	
Unknown liquids	Plastic tote	Plastic tote	3	Two full totes and one 1/3 full



## TOWN OF NORMAN WELLS SPILL CONTINGENCY PLAN

Initial Notifications  
August 22, 2018

### 3.0 INITIAL NOTIFICATIONS

“An immediately reportable spill is defined as a release of a substance that is likely to be an imminent hazard to human health and/or the environment or meets or exceeds the reportable quantities... These spills MUST be reported to the NWT 24-hour Spill Report Line at (867) 920-8130.” (MVLWB 2018).”

The reportable quantities (from MVLWB 2018) referred to in this definition are provided in Appendix A of this SCP, following the NT-NU Spill Report Form.

### 3.1 CONTACT INFORMATION AND RESPONSIBILITIES

Staff responsible for activating this SCP at each municipal facility covered in this Plan is outlined in Table 3-1. If a spill is discovered after normal working hours, the employee will use the most expedient method at their disposal to contact the Public Works Foreman as the First Person of Contact. Emergency phones are located at the WTF and Norman Wells Town Office. The First Person of Contact (i.e., the Public Works Foreman) will be responsible for notifying the NWT 24-hour Spill Report Line at (867) 920-8130. The spill response procedure is summarized in Figure 3-1.

**Table 3-1 Spill Response Personnel and Responsibilities**

Title	Name	Contact Information	Responsibilities
Senior Administrative Officer (SAO)	Catherine Mallon	Phone: (867) 587-3700 ext 1001 <a href="mailto:SeniorAdministrativeOfficer@normanwells.com">SeniorAdministrativeOfficer@normanwells.com</a>	<ul style="list-style-type: none"><li>Respond to media Inquiries</li><li>Act as back-up first person of contact</li></ul>
Public Works Foreman	Jordon Balanuik	Phone: (867) 445-9334 <a href="mailto:PublicWorksForeman@normanwells.com">PublicWorksForeman@normanwells.com</a>	<ul style="list-style-type: none"><li>First Person of Contact for all municipal facilities</li><li>Activate the SCP at the SWDF</li><li>Notify the GNWT the 24-hour Spill Report Line of all spill occurrences</li></ul>
Water Utilities Operators	Hugo Pabke and Greg McDonald	Phone: (867) 688-0680 <a href="mailto:UtilitiesWorkers@normanwells.com">UtilitiesWorkers@normanwells.com</a>	<ul style="list-style-type: none"><li>Activate the SCP at the WTF and Sewage Lagoon</li><li>Assist the Public Works Foreman as needed</li></ul>



## 3.2 SPILL RESPONSE

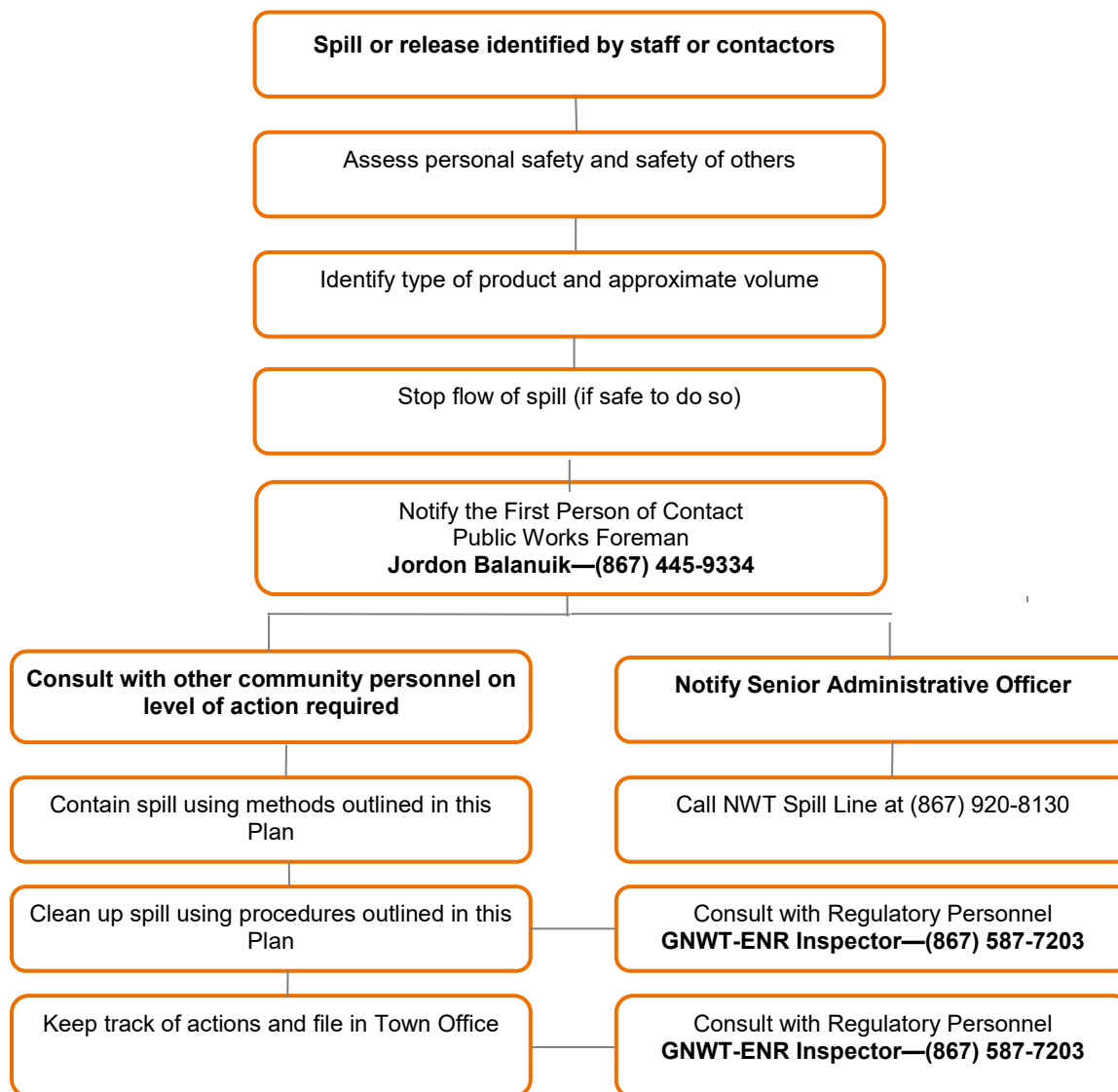


Figure 3-1 Spill Response Flow Chart for the Town of Norman Wells



## TOWN OF NORMAN WELLS SPILL CONTINGENCY PLAN

Initial Notifications  
August 22, 2018

### 3.2.1 First Response Individual

The response of the first person on the scene shall:

1. Be alert and consider your safety first.
2. Assess the hazard to persons in the vicinity of the spill and, where possible, take action to control danger to human life.
3. If possible, identify the material or products involved in the spill.
4. If it is safe to do so, and if possible, try to stop the flow of material.
5. Contact the First Person of Contact, the Public Works Foreman, or if necessary, the SAO.

### 3.2.2 First Person of Contact

#### 3.2.2.1 Initial Actions

The First Person of Contact's responsibility includes:

1. Proceed to the spill location.
2. Assess the situation and make arrangements for first aid and removal of injured personnel. Take the necessary action where possible to secure the site to protect human safety.
3. If possible and safe, take the appropriate action to stop release of the material
4. Take necessary action to contain or prevent the spread of the spilled material, if safe and possible
5. Gather information on the status of the situation
6. As soon as practically possible, complete a spill report form (included in Appendix A of this SCP) and then contact the NWT 24-hour Spill Reporting Line at (867) 920-8130.

#### 3.2.2.2 Response Team Coordination

The First Person of Contact (Public Works Foreman) will be the on-site coordinator. They will have complete authority over the spill scene and response personnel. Their responsibilities will include:

1. Evaluate the initial situation and assess the magnitude of the problem
2. Activate the level of response necessary to meet the situation (e.g., local response only, additional external support)
3. Develop the overall Plan of Action for containment and clean-up of the specific incident
4. Assign responsibilities and coordinate between team members
5. Assess the requirements for personnel, equipment, materials, and tools to contain the spill
6. Direct the Spill Response Team in containment, recovery, clean up, and disposal operations
7. Direct public, media, and government agency inquiries to the SAO
8. Confirm response team members receive adequate training, and it is maintained/up-to-date, to fulfill their responsibilities as part of the Spill Response Team.



## TOWN OF NORMAN WELLS SPILL CONTINGENCY PLAN

Initial Notifications  
August 22, 2018

### 3.3 EMERGENCY CONTACT NUMBERS

Resources in the community to assist in the completion of spill response activities are presented in Table 3-2.

**Table 3-2 Emergency Contact Numbers**

Resource	Name	Contact
Equipment and Personnel	Norman Wells Town Office	(867) 587-3700
	Public Works Foreman	(867) 445-9334
Fire & Rescue	Fire Chief	(867) 445-3885
	Royal Canadian Mounted Police	(867) 669-1111
Emergency Health	Monica Loomis Health Centre	(867) 587-3333 or (867) 587-6688
	Sahtu Health and Social Services Authority	(867) 587-3650
	Medivac	(867) 669-4115
Spill Notifications	NWT 24-Hour Spill Line	(867) 920-8130
Heavy Equipment Contractors	HRN Contracting	(867) 587-2168
	Northridge Contracting Ltd.	(867) 587-2050
Other	Environment and Natural Resources (ENR) Inspector	(867) 587-7203
	GNWT Environmental Protection Division (Yellowknife)	(867) 873-7654
	Sahtu Land and Water Board	(867) 598-2325
	Environment and Climate Change Canada (Enforcement)	(867) 669-4730
	Canutec (the Canadian Transport Emergency Centre)—for emergencies involving dangerous goods	(613) 996-6666 or *666 on a cellular phone
	Department of Fisheries & Oceans (Hay River)	(867) 875-5300
	Crown-Indigenous Relations and Northern Affairs Canada (formerly INAC) Northwest Territories Division (Yellowknife)	(867) 669-2440



## **4.0 ACTION PLAN – POTENTIAL SPILL SITUATION**

### **4.1 RESOURCE INVENTORY**

Within Norman Wells, the following heavy equipment resources are available to respond to a spill:

- Loader
- Excavator
- Backhoe
- Bobcat
- Bulldozer
- Dump Truck
- Fuel Truck
- Shovels and hand tools

Municipal spill kits are located at the following locations:

- WTF—two 50-gallon spill kits in the boiler room
- Sewage Lagoon—oil booms
- Two portable spill kits with Public Works

### **4.2 GENERAL SPILLS**

Norman Wells conducts operations that have the potential to result in the release of contaminants including fuel, oil, and chemicals. The estimated volume and material of each release will be compared to the Reportable Spill Quantity table outlined in Appendix A of this SCP to determine the reporting requirements.

Spills have the potential to cause adverse effects on the surrounding environment, such as harming human health, wildlife, and aquatic life. Depending on the material, spills can persist in soils or sediment in the environment, bioaccumulate in vegetation or animals, volatilizing and enter the atmosphere, or run-off into water bodies.

Norman Wells is committed to adopting a defensive spill position by implementing the following actions:

- Storing spill kits in community-owned vehicles and at municipal facilities where potential spills may occur
- Using storage tanks recommended by the Fire Marshal (i.e., dyked tanks or double-walled) and that meet the fire code
- Training personnel in safe operating procedures
- Storing minimal quantities of hazardous materials at municipal facilities
- Storing up-to-date copies of Material Safety Data Sheets of hazardous materials that are used at municipal facilities and storing them where they are used



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In the event of a release, the response strategy is as follows:

- Be alert and consider safety first
- Consider the fire and safety hazard to human life; warn people in vicinity of the spill to vacate the area if necessary
- Shut off the source of the release, if safe to do so
- Shut off all equipment that may cause a spark. Do not smoke in vicinity of the release
- Provide first aid if necessary
- Secure the area and prevent access to the spill area
- Prevent the spill area from increasing in size using barriers, berms, or other appropriate materials
- Notify the First Person of Contact (i.e., Public Works Foreman) that a spill has occurred

The Public Works Foreman will contact the SAO as required. The Public Works Foreman will complete the following steps:

1. Activate this Plan
2. Consult with on-site staff and coordinate the response including contacting the NWT 24-hour Spill Line at (867) 920-8130
3. Deploy resources, as necessary, including heavy equipment, municipal works staff, and a spill kit
4. Commence spill containment and collection activities
5. Contaminated soil is to be disposed at an approved disposal facility
6. Complete a spill report (see Appendix A of this SCP)

### 4.3 SEWAGE SPILLS

Wastewater releases in Norman Wells could occur during the transfer and transport of sewage to the Sewage Lagoon (e.g., via municipal sewer piping or truck). The maximum size of a sewage spill from a sewage haul truck would be limited to the capacity of the truck (i.e., 12 m<sup>3</sup>). A break in the sewer piping (above grade and buried; Figure 2-2) could also occur, as well as a breach in the Sewage Lagoon (i.e., retention dam). The sewer piping system has an average flow capacity of 420 m<sup>3</sup>/day (Stantec, 2018). The size of a sewage spill from piping or a lagoon breach would depend on the time elapsed from spill occurrence and to stoppage.

In the event of a sewage release, the response strategy is as follows:

- Be alert and consider safety first
- Shut off the source of the release, if safe to do so
- Provide first aid if necessary
- Secure the area and prevent access to the spill area
- Prevent the spill area from increasing in size using barriers, berms, or other appropriate materials
- Notify the First Person of Contact (i.e., Public Works Foreman) that a spill has occurred



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The Public Works Foreman will contact the SAO as required. The Public Works Foreman will complete the following steps:

1. Activate this Plan
2. Consult with on-site staff and coordinate the response including contacting the NWT 24-hour Spill Line at (867) 920-8130
3. Deploy resources, as necessary, including heavy equipment, municipal works staff, and a spill kit
4. Commence spill containment and collection activities using the back-up sewage truck. The heavy equipment can create containment berms and collect contaminated soil. The spill area is to be treated with lime and covered with soil.
5. Contaminated soil is to be disposed at an approved disposal facility
6. Complete a spill report (see Appendix A of this SCP)

### 4.4 HAZARDOUS MATERIAL SPILLS

Norman Wells stores hazardous materials at the WTF and SWDF that have the potential to result in the release of contaminants including fuel, oil, and chemicals. The estimated volume and material of each release will be compared to the Reportable Spill Quantity table outlined in Appendix A to determine the reporting requirements.

The most probable sources of hazardous material releases would likely be the result of leaking storage containers (e.g., drums, pails), or during transport or use. Potential impacts from a spill or leak could cause adverse effects on the surrounding environment as these substances may be not easily biodegradable.

The actions to be implemented during a release would be the same as those outlined in Section 4.1.

### 4.5 SPILL CONTAINMENT METHODS

#### 4.5.1 Containment on Land

In cases of spills on land, the initial containment step is to prevent further dispersion. For liquid spills, this is done with cut-off ditches and diking, as needed around the spill, using mobile heavy equipment. If necessary, absorbents (e.g., Zorbal, Hazorb Pillows, peat moss, sawdust) or gelling agents (e.g., Chemgel) should be spread to prevent further spread or seepage.

##### 4.5.1.1 Dykes

A dyke is an embankment or berm that can be created using soil to surround a spill on land. These dykes are constructed around the perimeter or downslope of the spill. A dyke needs to be built up to a size that will contain the expected maximum quantity of liquid that may reach it. A plastic tarp can be placed on and at the base of the dyke such that the liquid can pool and be subsequently removed with sorbent materials, or by pumping into barrels/drums or bags. If the spill is migrating slowly, a dyke may not be necessary, and sorbents can be used to soak up liquids before they migrate away from the spill.





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### 4.5.1.2 Trenches

A trench is an excavation that can be dug out to contain spills as long as the top layer of soil is thawed and containment can occur within the trench. Shovels, picks, axes, or a loader can be used depending on the size of the trench needed and accessibility. It is recommended that the trench be dug to bedrock, permafrost, or other containment layer (e.g., clay) that can then provide containment for the spilled liquid. The liquid can then be recovered using a pump or sorbent materials.

### 4.5.2 Contaminant on Open Water

For spills in open water, containment procedures will vary depending on whether the spilled material floats or sinks, and whether the water is flowing or standing.

For floating materials, a surface boom should be deployed. In relatively slow-flowing water, the boom should be stretched across the flow, downstream from the spill. In standing water, the boom can be deployed from shore, around the spill, in effort to contain the spill close to shore. If a boom will not work or is not feasible, a dyke may be constructed, especially in shallow areas.

Weirs, or small dams or barriers, can also be used to contain floating materials in streams and to prevent further migration downstream. Plywood or other materials easily accessible on site can be placed into and across the width of the stream such that water can still flow under the weir. Spilled fuel will float on the surface of the water and could be contained at the foot of the weir.

For sinking materials in standing water, a dyke should be constructed, if possible, to contain the dispersion of the material. In flowing water, it may be most appropriate to divert the flow around the spilling sinking material by diking and ditching if possible.

The First Person of Contact will have to judge whether the impact of the spill will be best mitigated by carrying out a containment procedure or by immediately attempting to remove any containers from the open water. This will depend on the equipment available and how long it will take for additional equipment to arrive. Removed containers should be placed on an impermeable contained surface (e.g., poly-liner or tarp in a depression) to prevent further seepage.

### 4.5.3 Contaminant on Snow

In the winter, snow is one of the best absorbents as spilled materials will typically migrate into the snow until they become immobile. Snow provides protection against the spread of fire, if the spill is flammable or is located where burning is practical. Snow also allows some spilled materials to float as it melts during burning. Snow should be used as much as possible when it is available.

Contaminated, saturated snow also facilitates removal of the spilled materials to an approved recovery or disposal facility. Appropriate recovery or disposal sites will depend on the spill material and the location of the spill.



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Methods to prevent a spill on snow from spreading include:

1. Compact the snow around the outside perimeter of the spill area, this is easily done with a snowmobile or heavy equipment if available.
2. Construct and compact snow dams, downslope of the spill
3. Locate the low point of the spill area then clear channels in the snow to allow material not absorbed to flow into the low area
4. Once collected the spill material contained in the low area can either be shoveled into containers or picked up using mobile heavy equipment and then transported to an approved disposal site.

### 4.5.4 Contaminant on Ice

Spills on ice will be affected by the strength of the ice and the floating or sinking characteristics of the spilled materials. The safe bearing capacity of ice must be carefully assessed to protect personnel health and safety. The GNWT Department of Transportation document *Guidelines for Safe Ice Construction 2015* can be used as a reference for estimating safe bearing capacity of ice (GNWT 2015). Table 4-1 can be used as a starting point to estimate the safe bearing capacity with minimal level of control measures required. The site-specific safe bearing capacity of ice should always be calculated by a qualified individual.

**Table 4-1 Estimated Safe Ice Load Bearing Capacity (adapted from GNWT 2015)**

Ice Thickness		Safe Load Bearing Capacity	
mm	inches	kg	tons
200	7.8	1,600	1.7
300	11.8	3,600	3.9
400	15.7	6,400	7.
500	19.6	10,000	11
600	23.2	14,400	15.9
700	27.5	19,600	21.6
800	31.4	25,600	28.2
900	35.4	32,400	35.7
1000	39.3	40,000	44
1100	43.3	48,400	53.3
1200	47.2	57,600	63.4

Some general rules about ice strength include (GNWT 2015):

1. White ice is only half as strong as blue ice
2. Use extreme care if weather is extremely cold after a warm period or is warm after a cold period
3. Control speed in shallow water to avoid wave build-up under the ice, which increases the potential for ice cracking or heaving near shore.



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If the spill does not penetrate the ice, and the ice is safe to work on, containment will take the same form as containment on land (see Section 4.5.1).

If the spill penetrates the ice, then the situation is similar to spills in open water (see Section 4.5.2). If the spilled material floats, then the ice should be broken to install a containment boom. The ice between the spill and the boom should be collected and disposed of with the spilled materials. In standing water under the ice, the primary effort should be to recover the spilled material.

### 4.5.5 Fire or Explosion

When fire is associated with a spill of hazardous material, extinguishing the fire is a necessary step. The fire may prevent efforts to stop or minimize the spillage. The first and most important step is to keep people safe.

Dykes should be constructed downslope from liquid spills to minimize spreading of fire and contain unburned fluid. Foam, carbon dioxide or water should then be used as appropriate for the fire and material burning. Care must be taken to prevent inhalation of vapors that are products of combustion.

The Norman Wells Fire Crew is trained and equipped to combat fires. When the fire is extinguished, proceed to stop further spillage, contain the spill, and initiate appropriate clean-up measures.

## 4.6 MANAGING SPILL RELATED WASTES

Once a spill has been contained, Norman Wells will consult with the GNWT-ENR and the GNWT Department of Lands inspectors to determine the level of clean-up required.

Generally, loose material (e.g., soil, gravel, rock, snow, powdered chemicals) should be scooped up (using equipment appropriate to the spill size) and transferred onto containers. Any soil beneath the spill, which may have been contaminated, should also be removed, where possible, and disposed of with the recovered material. In most cases, clean-ups are initiated at the perimeter of the spill moving towards the center. Absorbent pads and booms can be used to clean up and contain spills and, once used, these must then be placed in plastic bags for appropriate disposal as per the regulatory agencies direction. Most petroleum hydrocarbon-contaminated soils will require shipment to an approved facility for treatment. Sewage-related liquid wastes may be placed at the Sewage Lagoon while other solid wastes may be disposed of (buried) in the landfill at the municipal SWDF.

Final disposal of the recovered material will be determined in consultation with the regulatory officials and the advice of the manufacturer.

Following clean-up, all equipment and tools used should be washed properly and decontaminated or replaced if this is not possible. Water generated from washing procedures will be properly disposed of in accordance with the regulatory agencies directions.



## **4.7 RESTORING AFFECTED AREAS**

Once a spill has been contained, Norman Wells will consult with the GNWT lead agency inspector assigned to the file to determine the level of restoration required. The Inspector may require a site-specific study to confirm that the appropriate restoration methods and level of effort are used.

After satisfactory/approved site restoration, Norman Wells will update the GNWT lead agency inspector and the GNWT Spill Line to close the spill file.



## 5.0 TRAINING

The effectiveness of this SCP will greatly depend on the following factors:

1. Proper distribution and review of this SCP by those personnel most likely to encounter a spill during the course of their normal duties within municipal facilities
2. Proper training of employees in spill response procedures and implementation of this SCP, including:
  - a. Training of response personnel on required actions, methods, and procedures to be implemented in the event of this SCP being put into action
  - b. Training of the response personnel in the proper techniques and materials to use in the event of a spill and depending on the material spilled and location of spill (e.g., on land, in water, on snow)

Norman Wells will be responsible for the training of their identified response personnel in the proper technique for spill response. The GNWT-ENR holds training sessions each year for spill response (MVLWB 2018) and they should be contacted to find out more about the location and timing of these sessions. Municipal employees likely to encounter a spill can attend one of these sessions to receive training on proper spill response techniques.

Training should be conducted on an as-needed basis but should be maintained and up-to-date (e.g., necessary personnel receive training every three years). Norman Wells also commits to conducting appropriate and feasible emergency response exercises to assist with personnel training, improve spill response, and enhance the safety of its residents. All records of spill response training and exercises should be kept in the Norman Wells Town Office.



## TOWN OF NORMAN WELLS SPILL CONTINGENCY PLAN

References  
August 22, 2018

### 6.0 REFERENCES

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**APPENDIX A**  
**NT-NU SPILL REPORT FORM AND**  
**REPORTABLE QUANTITIES TABLE**

# BHBI 'GD=@@F9 DCFH

OIL, GASOLINE, CHEMICALS AND  
OTHER HAZARDOUS MATERIALS



Canada



BHBI 'GD=@@F9 DCFH' @B9'

HY: f! \*+L- &\$!, %\$ ' : UI . f! \*+L, + ' !\* - & ( ' '9a U]. 'gd]' g4 [ c j 'bHWU

F9 DCFH' @B9' I G9 'CB @M

A	Report Date: MM DD YY	Report Time:	<input type="checkbox"/> Original Spill Report		FYdcfhiBi a VYf.
	Occurrence Date: MM DD YY	Occurrence Time:	CF <input type="checkbox"/> Update # _____ to the Original Spill Report		
C	Land Use Permit Number (if applicable):		Water Licence Number (if applicable):		
D	Geographic Place Name or Distance and Direction from the Named Location:			Region: <input type="checkbox"/> NT <input type="checkbox"/> Nunavut <input type="checkbox"/> Adjacent Jurisdiction or Ocean	
E	Latitude: _____ Degrees _____ Minutes _____ Seconds		Longitude: _____ Degrees _____ Minutes _____ Seconds		
F	Responsible Party or Vessel Name:		Responsible Party Address or Office Location:		
G	Any Contractor Involved:		Contractor Address or Office Location:		
H	Product Spilled: <input type="checkbox"/> Potential Spill	Quantity in Litres, Kilograms or Cubic Metres:		U.N. Number:	
I	Spill Source:	Spill Cause:		Area of Contamination in Square Metres:	
J	Factors Affecting Spill or Recovery:		Describe Any Assistance Required:		Hazards to Persons, Property or Environment:
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials:				
L	Reported to Spill Line by:	Position:	Employer:	Location Calling From:	Telephone:
M	Any Alternate Contact:	Position:	Employer:	Alternate Contact Location:	Alternate Telephone:

F9 DCFH' @B9' I G9 'CB @M

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:
Lead Agency: <input type="checkbox"/> EC <input type="checkbox"/> CCG/TCMSS <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> AANDC <input type="checkbox"/> NEB <input type="checkbox"/> Other: _____			Significance: <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Unknown		File Status: <input type="checkbox"/> Open <input type="checkbox"/> Closed
5 [ YbWn	7 cbHUiBiUa Y.	7 cbHUiBiUa Y.	FYa Uf_g.		
Lead Agency:					
First Support Agency:					
Second Support Agency:					
Third Support Agency:					



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H8; '7Ugg'	Gi VghUbWZcf BK H& ' <ci f'GdJ''@bY'	a a YXJUH' mFYdcfHUV'Y E i UbHjYg'
1	Explosives	Any amount
2.3	Compressed gas (toxic)	
2.4	Compressed gas (corrosive)	
6.2	Infectious substances	
7	Radioactive	
None	Unknown substance	
2.1	Compressed gas (flammable)	
2.2	Compressed gas (non-corrosive, non-flammable)	
3.1	Flammable liquids	> 100 L
3.2		
3.3		
4.1	Flammable solids	> 25 kg
4.2	Spontaneously combustible solids	
4.3	Water reactant	
5.1	Oxidizing substance	> 50 L or 50 kg
9.1	Miscellaneous products or substances excluding PCB mixtures	
5.2	Organic peroxides	> 1 L or 1 kg
9.2	Environmentally hazardous	
6.1	Poisonous substances	> 5 L or 5 kg
8	Corrosive substances	
9.3	Dangerous wastes	
9.1	PCB mixtures of 5 or more ppm	> 0.5 L or 0.5 kg
None	Other contaminants (e.g., crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, waste water, etc.)	> 100 L or 100 kg
None	Sour natural gas (i.e., contains H2S), sweet natural gas	Uncontrolled release or sustained flow of 10 min or more
BchY.	In addition, all releases of harmful substances, regardless of quantity, are to be reported to the NWT spill line if the release is near or into a water body, is near or into a designated sensitive environment or sensitive wildlife habitat, poses imminent threat to human health or safety, poses imminent threat to a listed species at risk or its critical habitat, or is uncontrollable.	
Source: AANDC, Guidelines for Spill Contingency Planning. April 2007		