

**UGFI Waste Management Plan  
(WMP)**

**Ikhil UGFI et al 02/J-35 Gas Well  
Drilling and Facilities Tie-in Program**

## **1. Introduction**

Waste that is generated from Utilities Group Facilities Inc.'s and subcontractors' activities must be managed in an acceptable manner that is consistent with government regulations, industry approved standards and company policy.

To avoid the consequences of poor waste management practices, it is essential that a Waste Management Plan (WMP) be adopted as part of all company operations.

The overriding goal of this Project is to leave no waste at the site. All solid waste and wastewater from camp and drilling activities will be collected as outlined below and transported off-site for reuse, recycling and appropriate disposal. No grey water produced during this Project will be released to the environment and no sumps will be excavated.

## **2. Waste Management Planning**

A detailed WMP is a vital part of the waste management process. This plan details the wastes generated during the Project, and specifies the proper handling, storage and disposal practice for each waste stream.

The WMP considers different streams of waste. It describes approaches for the disposal of waste materials and actively promotes waste minimization strategies.

## **3. Definitions**

### **3.1 Dangerous Goods**

Materials that are regulated by the Transportation of *Dangerous Goods* (TDG) *Act* may be either one of the 3,400 chemicals identified by name in Schedule 1 of the TDG Regulations or may have chemical properties that fall within one of nine TDG Classes.

### **3.2 Hazardous Chemicals**

A hazardous chemical can be any substance, class of substance or mixture of substances that is entering or is capable of entering the environment in a quantity or concentration that may constitute a danger to:

- the environment;
- plant or animal life, or
- human health.

### **3.3 Hazardous Materials**

Hazardous materials, in most cases, belong in the waste category “dangerous goods”. They include hazardous products such as poisons, corrosive agents, flammable substances, ammunitions, explosives, radioactive substances, or any other material that can endanger human health or well-being or the environment if handled improperly.

**Hazardous Waste** - A hazardous waste is a “hazardous chemical” disposed of or to be disposed of as a waste. They are usually hazardous materials (or dangerous goods under TDG) which have no further use.

### **3.4 Waste**

A waste is a product or substance that is no longer of any use to the company and is intended for disposal.

## **4. Waste Management Principles**

Management of waste is an important consideration of UGFI’s routine operations. Where possible, every effort shall be made to minimize waste production by incorporating the principles of waste **Reduction**, **Reuse**, **Recycle** and **Recover**.

The temporary camp has receptacles for recycling, as well as an organized area within the kitchen for segregating recyclable materials from waste materials. A main waste handling area within the camp will be set up for the final separation and sorting of recyclable and waste streams.

The WMP will be distributed to all camp workers and employees and posted in an accessible area in the camp kitchen and other communal areas. Tailgate meetings will be held to discuss the WMP contents and strategies, and provide an opportunity for concerns to be brought forth and addressed in a timely and appropriate manner.

#### **4.1 Reduce**

Source reduction of waste shall be initiated at each operated facility wherever possible. To achieve this objective, the following options will be considered:

- purchase supplies (e.g., cleaning supplies, camp supplies) in bulk to reduce container waste;
- purchase and use biodegradable products; and
- segregate hazardous from non-hazardous wastes, to minimize the possibility of total contamination.

#### **4.2 Reuse**

Several processes are in place to make maximum use of products used in the day-to-day camp operations. These are:

- make maximum use of waste materials through reuse in their original form;
- have cleaning rags washed for reuse;
- recover and reuse drilling fluids; and
- waste oil will be collected in used barrels that will be labelled accordingly. Handling and storage of the barrels will be monitored and carried out by Workplace Hazardous Materials Information System (WHMIS) certified staff. Barrels with waste oil will be transported off-site and either reused or disposed of (as described below).

#### **4.3 Recycle**

UGFI is committed to participating in the NWT recycling program “Cash in Your Trash” and will donate refundable recyclables to the Town of Inuvik to support youth, recreational programs and other community incentives. Materials recovered under this program include:

- glass jars and bottles that contained beverages;
- plastic bottles and containers that contained beverages;
- tin cans and pop cans that contained beverages; and
- tetra pack boxes that contained beverages.

#### **4.4 Recover**

Wastes generated may contain recoverable substances that could be used by others, including:

- hydrocarbon from drained filters can be recovered by the sub-contractors and collected in empty (properly labelled) barrels; and
- drilling fluids will be recovered and reused on individual hole sections of the drilling program.

### **5. Waste Identification and Classification**

UGFI is responsible for ensuring that all wastes are properly identified, characterized and classified as dangerous or non-dangerous in order to develop safe and efficient handling strategies that assure regulatory compliance. Key personnel will be trained in Waste Management Principles and waste segregation tasks, including up-to-date WHMIS training and orientations of the temporary waste storage facilities at the camp. The WMP will be distributed to all crews, and copies of the plan will be posted in appropriate areas of the camp. Additionally, regular tailgate meetings will stress the importance of UGFI's Waste Management Principles and the various duties associated with waste segregation. The recuperation processes and routines for waste segregation are explained in Sections 4 and 6.

#### **Drilling Waste Disposal**

UGFI will minimize the total volume of drilling fluids. Shale shaker systems, centrifuges and associated solids control equipment will be used to separate the solid drill cuttings from the liquid drilling fluid. UGFI will re-use drilling fluids on individual hole sections to minimize the amount of waste remaining at the end of the Project. However, drilling fluids cannot be used on subsequent projects. The final waste drilling fluids (i.e., fluids remaining after completion of the drilling program) will be collected in storage containers and transported off-site to an approved injection facility (e.g., Swan Hills Treatment Centre [SHTC] in Alberta or Fort Nelson in British Columbia).

Solid drilling waste (drill cuttings) will be collected, contained and transported to an approved, registered disposal site (e.g., SHTC in Alberta or Fort Nelson in British Columbia) site by truck.

## **6. Waste Segregation**

Waste segregation should be considered in three stages which are outlined in the following sections.

### **6.1. Primary Segregation.**

Once all wastes are identified they will be categorized as either domestic waste or industrial garbage. Primary segregation involves separation of these waste streams. "Domestic" wastes are generally paper and food wastes from the camp operations. These items will be stored in wildlife proof containers, transported off-site in regular intervals and disposed of at the Inuvik landfill site (Section 7.2). The remaining wastes that fall into the "industrial" category will be temporarily stored in tanks and containers, transported off-site and disposed of appropriately (Section 7.1). All wastewater (sewage and grey water) will be collected in lined, heated storage tanks, transported off-site (through local vacuum trucks) and disposed of at the Inuvik wastewater facility.

### **6.2. Secondary Segregation.**

Industrial wastes will be categorized into hazardous and non-hazardous waste streams. All hazardous wastes will be handled by certified staff and stored according to WHMIS requirements. Disposal of hazardous wastes is discussed below (Section 7.1). Non-hazardous industrial wastes may be suitable for waste minimization techniques such as for recycling or re-use. Remaining non-hazardous industrial wastes will be stored in wildlife proof containers, transported off-site and disposed of at the Inuvik landfill site (Section 7.2).

### **6.3. Tertiary Segregation.**

Industrial non-hazardous waste streams (e.g., packaging, plastic containers, non-recyclable cans and bottles, metal) will be divided into categories for recycling, re-use, or disposal (Section 7.2).

Industrial hazardous waste streams will mainly consist of used hydrocarbon products, filters, drilling fluids and solids. They will be separated into categories for re-use (Section 4.2), recovery (Section 4.4) or disposal outside of the NWT (Section 7.1).

## 7. Waste Disposal

UGFI is committed to handle and dispose of wastes as outlined in the following section.

### 7.1 Hazardous Industrial and Domestic Waste

Hazardous and combustible waste will consist of waste oil, oil and fuel filters, drilling fluids and drilling wastes. Hydrocarbon contaminated materials that may result from spills also fall into this category. Waste oil will be collected and stored in used barrels, which will be labelled appropriately. The barrels will be stored temporarily in a bermed area and transported off-site for potential re-use. Oil and fuel filters used by UGFI and sub-contractors will be handled and stored according to WHMIS requirements and disposed of at an appropriate and authorized landfill site outside of the territory (e.g., SHTC in Alberta or Fort Nelson in British Columbia).

Table B.1 provides an overview of chemicals used during the drilling program.

**Table B.1 Chemicals used during the UGFI Drilling Program**

<i>Product Trade Name</i>	<i>Description</i>	<i>Purpose</i>
Caustic potash	Potassium hydroxide	pH control agent
Potassium chloride		Freeze depression
Xanvis	Xanthum gum	Viscosity increase
Kelzan XCD	Xanthum gum	Viscosity increase
Barite		Weighting agent
Bicarbonate of soda		Calcium sequester
Citric acid		Alkalinity / pH Reducer
Prima Seal M		Fibrous lost circulation material (LCM)
Q'PAC Regular	Polymer	Fluid loss, high viscosity
Sawdust		LCM
Soda ash		Calcium sequester
Soya lecithin		Hydrate stabilizer
Stardril	Modified starch	Fluid loss reduction
XL Defoamer	Polymer defoamer	Decrease foam
Alcomer 60RD	PHPA encapsulator (polymer)	Hole and cuttings stability

It is estimated that the Project will produce the following drilling waste:

- 190 cubic metres (m<sup>3</sup>) of drilled solids;
- 155 m<sup>3</sup> of drilling fluids; and
- 22 m<sup>3</sup> of excess contaminated cement returns.

The Government of the Northwest Territories' (GNWT) Department of Environment and Natural Resources (ENR), Environmental Protection Section developed the *Guideline for the General Management of Hazardous Waste in the NWT*<sup>1</sup> which outlines the registration and tracking of generators, carriers and receivers of hazardous wastes in the NWT. UGFI will register as a generator of hazardous waste with the GNWT prior to commencement of the Project. UGFI will contract registered shipping companies and will track the transport of hazardous waste from the Project site to the appropriate, registered facilities. All required documentation will be requested, completed and kept on file.

## 7.2 Non-hazardous Industrial and Domestic Waste

Non-hazardous, domestic waste will consist of paper, food, tin cans, plastic packaging, metal and non-recyclable glass jars. These items will be stored in wildlife proof containers, transported off-site and disposed of at the Inuvik landfill site. According to the GNWT (2011<sup>2</sup>), the average person generates 3.7 kg (8.1 lb) of waste per person per day. Assuming a maximum of six weeks (42 days) of camp operation for 60 people, it is expected that the 2011 / 2012 program will generate approximately 9,500 kg (20,500 lb) of non-hazardous domestic waste.

Non-hazardous industrial waste is expected to be composed of plastic packaging, flagging tape, stakes, and similar items. All waste and debris will be collected daily, stored and disposed of along with the non-hazardous domestic waste.

All non-hazardous wastes will be disposed of at the Town of Inuvik landfill site. The facility has the appropriate permits and licenses in place and the Senior Administrative Officer (Mr. Grant Hood) has approved the use of

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<sup>1</sup> GNWT, ENR. 1998. Guideline for the General Management of Hazardous Waste in the NWT. [http://www.enr.gov.nt.ca/\\_live/documents/content/General\\_management.pdf](http://www.enr.gov.nt.ca/_live/documents/content/General_management.pdf). Accessed November, 2011

<sup>2</sup> GNWT, ENR. 2011. State of the Environment – 9. Solid Waste. [http://www.enr.gov.nt.ca/\\_live/pages/wpPages/soe\\_solid\\_waste.aspx](http://www.enr.gov.nt.ca/_live/pages/wpPages/soe_solid_waste.aspx). Accessed October 2011.



the facility by UGFI (Dana Moran, Development Officer, Town of Inuvik, pers. com. November 23, 2011). The Town of Inuvik will charge UGFI the appropriate disposal fees for the estimated 20,500 lb of non-hazardous waste.

### **7.3 Wastewater**

All wastewater will be collected in a series of three connected, lined and heated storage tanks, each with a capacity of approximately 62 cubic metres (m<sup>3</sup>). The tanks will be pumped out on a regular basis using a local vacuum truck. In the event that the vacuum truck cannot empty the tanks (e.g., due to bad weather and road closure), the existing tank capacity (approximately 186 m<sup>3</sup>) provides enough backup storage capability.

To reduce the impact to the environment through accidental leaks (or at the Inuvik wastewater facility), the following mitigation measure will be applied:

- the connected tanks will be enclosed by lined berms;
- biodegradable products will be used in camp operations to the greatest extent possible; and
- Grease traps installed in the drain pipes will prevent grease from entering storage tanks and with that the environment.

The biodegradable products that will be used in the temporary camp include kitchen cleaning agents, personal hygiene products, laundry detergents, floor cleaning agents and general cleaning agents.

All staff will be advised to conserve water and signs will be posted at the showers and sinks. Based on an average consumption rate of 100 litres (l) per day and person, it is expected that the Project will generate approximately 252,000 l of wastewater.

Wastewater will be disposed of at the Inuvik wastewater facility. UGFI will secure the necessary approval from the Town of Inuvik prior to Project commencement. In the event that the Inuvik facility is inaccessible or not approved as a disposal site, upon approval, the wastewater tanks will be transported to the closest appropriate facility (e.g., Whitehorse, Yukon).

#### **7.4 Recyclables**

Recyclable beverage containers will be collected in clearly labelled containers. All staff will be made aware of the recycling program and notes will be posted in the camp. Recyclables will be collected and transported to the Town of Inuvik and donated for their “Cash in your Trash” program.