



**Forest Fire Prevention**

**And**

**Suppression Guidelines**

**For**

**Industrial Activities**

## ***Forest Fire Prevention and Suppression Guidelines for Industrial Activities***

These *Forest Fire Prevention and Suppression Guidelines for Industrial Activities* (Guidelines) are issued as directions necessary for the carrying out of the **FOREST PROTECTION ACT R.S.N.W.T. c.F-10** under the authority of the **Forest Supervisor** pursuant to section 19(1) of the **FOREST PROTECTION ACT R.S.N.W.T. c.F-10**.

The Government of the Northwest Territories provides forest fire management services on forested areas, including settlement areas within land claim agreements and within the terms of those agreements. The Guidelines have been prepared to provide direction to forest managers and industrial operators for forest fire prevention and suppression, in areas where operations are taking place during the **closed season** (**FOREST PROTECTION ACT, R.S.N.W.T. c.F-10**, section 10)

The intent of the Guidelines is threefold. First, industrial operations must be conducted so that they do not contribute to the seasonal forest fire load. Second, industrial operations must be able to control and extinguish any fires that occur as a result of their operations. Finally, industrial operators must be able to respond to wildfires that may affect human life and the property of their operations.

Please ensure that these guidelines receive appropriate consideration in operations under your jurisdiction or management.

Robert P. Bailey  
Forest Supervisor

**FOREST FIRE PREVENTION AND SUPPRESSION GUIDELINES FOR INDUSTRIAL  
ACTIVITIES**

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# **FOREST FIRE PREVENTION AND SUPPRESSION GUIDELINES FOR INDUSTRIAL ACTIVITIES**

## **INTRODUCTION**

The Government of the Northwest Territories provides forest fire management services on forested areas, including settlement lands within land claim agreements, and within the terms of those agreements. The following Guidelines have been prepared to provide direction to forest managers and industrial operators for forest fire prevention and suppression, in areas where operations are taking place during the closed season from May 01 to September 30. These Guidelines are issued under Subsection 19(1) of the *FOREST PROTECTION ACT*.

The intent of these Guidelines is threefold. First, industrial operations must be conducted so that they do not contribute to the seasonal forest fire load. Secondly, industrial operations must be able to control and extinguish any fires that occur as a result of their operations. Finally, industrial operators must be able to respond to wildfires that may affect human life and the property of their operations.

If there is a conflict between these Guidelines and the *FOREST PROTECTION ACT* (FPA), the *FOREST MANAGEMENT ACT* (FMA), the *MACKENZIE VALLEY RESOURCE MANAGEMENT ACT* (MVRMA), or the regulations made under those Acts, the Acts and or regulations will prevail to the extent of any inconsistencies.

## **PART 1 – APPLICATION, AUTHORITY AND DEFINITIONS**

### **1. Application**

- (1) PART 2 - PERSONNEL AND EQUIPMENT, PART 3 - FIRE PREVENTION, and PART 4 - FOREST FIRE SUPPRESSION apply
  - (a) from May 1 to September 30 each year or where ordered closed, and
  - (b) to persons and industrial activities in or within 1000 metres of a forest area.

### **2. Authority**

- (1) These Guidelines are issued as directions necessary for carrying out the FPA under the authority of the Forest Supervisor pursuant to section 19(1) of the FPA.

### **3. Definitions**

The following terms apply to the Guidelines:

**Closed District** – means an area declared to be a closed district under paragraph 19(1)(f) of the FPA.

**Closed Season** – means the period beginning on May 1 and ending on September 30 as referred to in subsection 10(1) or the period established in an order made under subsection 10(2) of the FPA.

**Fire Danger Rating** – the process of systematically evaluating and integrating the individual and combined factors influencing fire danger represented in the form of fire danger indexes.

**Fire Environment** – the surrounding conditions, influences, and modifying forces of topography, fuel, and fire weather that determine fire behavior.

**Fire Equipment Cache** – A supply of fire fighting tools and equipment in planned quantities or standard units at a strategic point for the exclusive use in fire suppression.

**Fire Extinguisher** – means a fully charged and operable fire extinguisher bearing the Underwriter's Laboratories of Canada (ULC) label that rates the extinguisher as suitable for use on class A, B or C fires.

**Fire Hazard** – a general term to describe the potential fire behavior, without regard to the state of weather-influenced fuel moisture content, and/or resistance to fireguard construction, for a given fuel type. Such an assessment is based on physical fuel characteristics.

**Fire Preparedness Plan** – a plan outlining the condition or degree of being able and ready to cope with an anticipated fire situation.

**Fire Prevention** – activities designed to prevent the occurrence of fires caused by people. Fire prevention activities include public and school education, media campaigns, preparation of community forest fire management and protection plans, and the reduction of fire hazards and risks.

**Fire Risk** – the probability or chance of fire starting determined by the presence and activities of causative agents (i.e. potential number of ignition agents).

**Fire Suppression** – all activities concerned with controlling and extinguishing a fire following its detection and may include initial attack, sustained attack, limited action, delayed action, or observation and monitoring.

**Fire Watcher** – a designated person at a worksite to provide surveillance for forest fires as a result of work at that worksite.

**Forest Area** – any uncultivated land that, by reason of the existence of trees, grass or other vegetation on the land, possesses timber, forage, recreational, wildlife or other value.

**Forest Fire** – any wildfire or prescribed fire that is burning in a forested area.

**Forest Officer** – a forest officer appointed under subsection 17(1) of the FPA, members of the RCMP, or wildlife officers under the Wildlife Act as referred to in subsection 17(2) of the FPA.

**Forest Supervisor** – means the Forest Supervisor appointed pursuant to Section 16 of the FPA.

**Fuel Break** – an existing barrier or a change in fuel type or conditions, or a strip of land that has been modified or cleared, that acts as a buffer to prevent the spread of fire.

**Heavy Equipment** – crawler tractors, skidders, excavators or other similar equipment.

**Hot Work** – any work generating significant amounts of heat and includes the cutting, grinding, welding, the heating of metals and flaring of gases.

**Industrial Activity** - includes land clearing, timber harvesting, timber processing, mechanical site preparations and other silviculture treatments, gas or oil well operations, mining, highway maintenance and construction, engineering operations, plant harvesting, manufacturing, milling, railroad operations, trenching, the use of explosives and any prescribed activity within.

**Initial Attack** – the action taken to halt the spread or potential spread of a fire by the first fire-fighting force to arrive at the fire.

**Large Engine** – an engine having a power greater than 7.5 kW (10 hp) used in an industrial activity, excluding a water-borne engine, an engine in a vehicle primarily used for the transportation of people, or an engine in a helicopter.

**Owner** – in relation to an industrial activity means a person who has the right to conduct the industrial activity if the industrial activity is conducted on private land; or a licensee or permittee if the industrial activity is conducted on Crown Land in a Forested Area.

**Permit** – a permit issued under Section 21 of the FPA.

**Person in Charge** – a person who is present at the worksite and who is in charge of industrial activities conducted at the worksite, or a person who has been authorized by the owner to represent the owner at the worksite.

**Pile** – an accumulation of waste material not larger than 25 square metres (m<sup>2</sup>) as referred to in section 18 of the *Exemption List Regulations* under the MVRMA.

**Portable Pump Unit** - means a water pump, not affixed to another machine, that is capable of maintaining a pressure of 1000 kPa (145 psi) while delivering 135 litres of water per minute from 30 metres of hose with

- (a) a nozzle having a 9.5 mm (3/8") opening,
- (b) a suction hose,
- (c) at least 450 metres of discharge hose having a diameter not less than
  - (i) 38 mm, (1 1/2") unlined, or
  - (ii) 25 mm, (1") lined, and
- (d) the tools and accessories necessary to operate and maintain the water pump and hoses.

**Property** – land or real estate, including both private and public land or real property.

**Small Engine** - an internal combustion engine having a power of 7.5 kW (10 hp) or less, excluding a water-borne engine or an engine in a vehicle primarily used for the transportation of people.

**Sump** – a depression in the ground constructed for the purpose of storing water.

**Water Delivery System** – a system consisting of a water supply, a water pump or equivalent means of pressurizing water, the ancillary hoses, attachments, and tools necessary for the operation and maintenance of the system, that can deliver to any place on a worksite or burn area,

- (a) water at a pressure of 280 kPa (40 psi) and a rate of 90 litres per minute through a 9.50 mm (3/8”) bore nozzle opening for 50 minutes or
- (b) a 2500 litre stationary or mobile supply of water, of which 0.5 per cent is liquid surfactant concentrate that, when used with a pump, hose and nozzle, is capable of producing foam that will extinguish a fire in ordinary combustibles such as wood, paper or forest products.

**Windrow** – an accumulation of waste material not more than 330 metres in length and not more than 15 metres in width.

**Worksite** – in the case of an industrial activity other than timber harvesting, the site at which the work is performed, or in the case of timber harvesting, an area of land within which an operation relating to timber harvesting is performed.

## **PART 2 – PERSONNEL AND EQUIPMENT**

### **4. Fire Watcher**

- (1) A Fire Watcher is required in all industrial operations to
  - (a) watch for sparks and fires,
  - (b) report any fires to a Forest Officer, a peace officer or the Person in Charge at the worksite at which the fire watcher is engaged, and
  - (c) assist in fighting any fire that occurs in the area being watched by the fire watcher.
- (2) If the fire watcher reports a fire, the Person in Charge of an industrial activity must immediately report the forest fire to a Forest Officer, peace officer or person answering a forest fire reporting number.
- (3) A Person in Charge of an industrial activity must ensure that a fire watcher has access to the following:
  - (a) one round-nosed shovel,
  - (b) one Pulaski tool or mattock,
  - (c) one hand-tank pump containing at least 18 litres of water, and
  - (d) a radio or telephone that can be used to report a fire and request assistance.

### **5. Fire fighting tools – general**

- (1) If the number of persons who normally work at a worksite is three (3) or less, the person carrying out the industrial activity must ensure that the following fire fighting tools are kept at the worksite:
  - (a) one round-nosed shovel,
  - (b) one Pulaski tool or mattock, and
  - (c) one hand-tank pump containing at least 18 litres of water.
- (2) If the number of persons normally working at a worksite is more than three, the person carrying out the industrial activity must ensure that the

following fire fighting tools are kept at the worksite:

- (a) one round-nosed shovel, Pulaski tool or mattock for each person,
  - (b) one hand-tank pump containing at least 18 litres of water for every 3 persons, to a maximum of 8 hand-tank pumps.
- (3) For the purpose of Guideline (2), the number of round-nosed shovels must, as nearly as possible, equal the combined number of Pulaski tools and mattocks.

#### **6. Fire fighting tools - Large Engines**

- (1) A Person in Charge of an industrial activity must ensure that every Large Engine used in an industrial activity has the following fire fighting tools attached to it:
- (a) one round-nosed shovel,
  - (b) one Pulaski tool or mattock,
  - (c) one fire extinguisher with a ULC rating of at least 1-A, 5-B,C, and
  - (d) one fire extinguisher with a ULC rating of at least 3-A, 10-B,C or an integral vehicle fire suppression system.

#### **7. Fire fighting tools - Hot Work**

- (1) A Person in Charge of an industrial activity must ensure that the following fire fighting tools are kept at each worksite where Hot Work is performed:
- (a) two fire extinguishers each with a ULC rating of at least 3-A, 10-B, C,
  - (b) one round-nosed shovel, and
  - (c) two hand-tank pumps containing at least 18 litres of water each.

#### **8. Fire fighting tools – explosives**

- (1) If explosives are used in an industrial activity the Person in Charge must ensure that the following fire fighting tools are kept at the place from which the blast will be controlled:

- (a) two round-nosed shovels and
- (b) two hand-tank pumps containing at least 18 litres of water each.

## **9. Fire fighting tools – helicopters**

- (1) If one or more helicopters are normally used in an industrial operation to move personnel and equipment to and from a worksite, the Person in Charge must ensure that there is a landing spot kept near the worksite for the exclusive use of each helicopter, and that the helicopter is equipped with a water bucket that is
  - (a) of a type designed and adapted for aerial fire fighting,
  - (b) capable of being attached to a helicopter,
  - (c) capable of being both filled and emptied from a helicopter while the helicopter is airborne, and
  - (d) operated by pilots who are knowledgeable about the use of water buckets.

## **10. Water Delivery Systems**

- (1) A Person in Charge of an industrial activity that includes an activity in Risk Classification A or B under Schedule 1 must ensure that each worksite has
  - (a) one Water Delivery System if there are normally 4 to 10 workers working at the worksite, or
  - (b) two Water Delivery Systems if there are normally 11 or more workers working at the worksite.
- (2) For the purpose of Guideline 10(1), if more than one activity is carried on at a worksite, the number of persons working at the worksite is considered to be the sum of the number of persons working at each activity.
- (3) A Person in Charge of an industrial activity that is a sawmill must ensure that the sawmill has at least one Water Delivery System.

- (4) If a Water Delivery System is required, the Person in Charge of the industrial activity must ensure that at least one person with the knowledge and competence to operate and maintain the Water Delivery System is at the worksite.
- (5) If it is unreasonable to provide the Water Delivery System, notwithstanding Guideline 10(1), because of the terrain, size of a worksite, or the lack of available surface water on site, a portable pump unit and a water source of at least 4,500 litres may be substituted.

## **11. Fire Equipment Cache**

- (1) The Person in Charge of an activity in Risk Classification A or B under Schedule 1 must ensure that extra equipment is kept at a central Fire Equipment Cache where it can be delivered to any place on each worksite of the industrial activity within 1 hour.
- (2) The quantity of extra equipment required by Guideline 11(1) is set out in Columns 2 to 5 of Schedule 2 opposite Column 1, which lists the number of persons who normally work at the worksite.
- (3) For the purpose of Guideline 11(2), the number of persons in Column 1 of Schedule 1, is the sum of the persons normally working at all of the worksites referred to in Guideline 11(1). For this purpose, if more than one industrial activity is carried out at a worksite, the number of persons working at the worksite is considered to be the sum of the number of persons normally working at each activity.

## **PART 3 - FIRE PREVENTION**

### **12. Large Engines**

- (1) A person must not operate a Large Engine unless it is equipped with a safe and effective device for arresting sparks that is
  - (a) an integral part of the exhaust system, and
  - (b) in good repair.
- (2) A person must not operate a Large Engine that operates in a stationary capacity unless the site has been cleared of combustible material for a distance of at least three metres in each direction from the Large Engine.
- (3) A Person in Charge of an industrial activity must ensure that a large engine meets the requirements under Guideline 12(1) and that combustible material is cleared as required under Guideline 12(2).

### **13. Small Engines**

- (1) A person must not operate a Small Engine unless
  - (a) the muffler on the Small Engine is maintained in good repair, and
  - (b) there is available at all times a Fire Extinguisher charged with at least 0.225kg (0.5lb.) of fire extinguishing chemical.
- (2) A person must not operate a Small Engine if the ability of the muffler to reduce hot carbon emissions has been lessened by modification of the muffler, a spark arrestor or by redirection of the emissions.
- (3) A Person in Charge of an industrial activity must ensure that a Small Engine is equipped with a muffler that meets the requirements under Guidelines 13(1)(a) and 13(2) and that a Fire Extinguisher is available as required under Guideline 13(1)(b).

#### **14. Hot Work**

- (1) A person must not perform Hot Work unless a Fire Watcher is present.
- (2) The Fire Watcher required under Guideline 14(1) must, in addition to the requirements of Guideline 14(1), remain at the site of the Hot Work for 30 minutes after the Hot Work has ceased, unless a longer period is required under Schedule 3.
- (3) Subject to Guideline 14(1), a Fire Watcher is not required if all combustible material is removed for at least ten metres from the place where the Hot Work is performed.

#### **15. Sawmills**

- (1) At least once in every calendar year, a Person in Charge of a sawmill must dispose of all combustible waste produced by the operation of the sawmill.

#### **16. Combustible material**

- (1) A Person in Charge of a place that is a camp, mine, sawmill, refuse disposal site or timber processing facility must ensure that an area that extends inward 15 metres from the perimeter of the place is kept clear of combustible material.
- (2) A Person in Charge of an industrial activity must ensure that all combustible material cleared from the area referred to in Guideline 16(1) is disposed of at least once in every calendar year.

#### **17. Explosives**

- (1) A person must not use explosives at the site of an industrial activity unless a Fire Watcher remains at the site where the explosives are used for at least 30 minutes after the explosives have been detonated, unless a longer period is required under Schedule 3.

**18. Restrictions on industrial activities**

- (1) A Person in Charge of an industrial activity must ensure that the activity is conducted in accordance with the requirements set out in Columns 3 and 4 of Schedule 3, that are opposite the industrial activity's Risk Classification in Column 2 and Forest Fire Danger Rating in Column 1.
- (2) The person carrying out the industrial activity must
  - (a) determine the industrial activity's Risk Classification from Schedule 1 and
  - (b) unless exempted by a Forest Officer, obtain the Forest Fire Danger Rating from a Resources, Wildlife and Economic Development (RWED) Regional Duty Officer.
- (3) A Forest Officer or RWED Regional Duty Officer can determine the Forest Fire Danger Rating for the industrial activity from data provided by the most representative weather stations.

## **PART 4 - FOREST FIRE SUPPRESSION**

### **19. Requirement for a Fire Preparedness Plan**

- (1) The person who is the holder of a license or permit authorizing an industrial activity on Northwest Territory lands must, before carrying out an industrial activity in Risk Classification A or B in Table 1 of Schedule 1,
  - (a) submit a Fire Preparedness Plan to a Forest Officer for the person's area of operation; if the activity is to be carried out on the area between May 1 and September 31.
  - (b) obtain a copy of the RWED Regional Duty Officer roster and applicable contact numbers for the purposes of obtaining information and reporting fires.

### **20. Content of Fire Preparedness Plan**

- (1) A person who is required under Guideline 19 to prepare a Fire Preparedness Plan, must ensure that the Fire Preparedness Plan specifies the following:
  - (a) the number of people, types of equipment and the anticipated location of the people and equipment during the carrying out of the industrial activity,
  - (b) the names of key personnel and how they may be contacted, including the owner and Person-in-Charge,
  - (c) the names of personnel, who meet the prescribed training qualification,

- (d) the tools and equipment available in a Fire Equipment Cache if a cache is required under Guideline 11(1) for that type of industrial activity,
- (e) the location of the weather stations that will be used to monitor the weather at the site of the industrial activity,
- (f) a schedule of industrial activity including proposed location and timing,
- (g) operating procedures in the event of a fire, and
- (h) activities which will be undertaken to prevent wildfires.

## **21. Requirement for a Permit to Burn**

- (1) A person who lights, fuels or makes use of one or more open fires to burn accumulations of waste material for resource management purposes must do so in accordance with the following conditions:
  - (a) before any fires are ignited
    - (i) the person lighting, fueling or making use of the open fires must obtain a Permit to Burn, and
    - (ii) a fuel break must be established around the fire to prevent the fire from escaping;
  - (b) during ignition and until all risk of the fires escaping is eliminated there must be at least two adult persons at the burn area who actively patrol to prevent the fire from escaping, and who are equipped with the following:
    - (i) a round nose shovel,
    - (ii) either an axe or a Pulaski, and
    - (iii) a Water Delivery System or a piece of Heavy Equipment that is suitable for fighting fires on the burn area that
      - (A) is capable of being delivered to the burn area within 1 hour, if the Fire Danger Rating is Moderate or less, or
      - (B) is located on the burn area, if the Fire Danger Rating is greater than Moderate.

- (2) If a fire escapes or threatens to escape from the burn area, in addition to any other requirements of the *FOREST PROTECTION ACT*, the person lighting, fueling or making use of the open fire must provide the requirements specified in one or more of the following paragraphs, in any combination necessary to limit or prevent the escape of the fire
  - (a) the number of adult persons with suitable fire fighting tools, that are necessary to limit or prevent the escape of the fire,
  - (b) one Water Delivery System, or
  - (c) two pieces of heavy equipment suitable for fire fighting on the burn area.
- (3) All fires must be extinguished within the specified time under which the Permit to Burn is issued.

## **22. Initial fire suppression**

- (1) For the purposes of the *FOREST PROTECTION ACT*, a person carrying out an industrial activity must take appropriate action when a fire is first discovered to
  - (a) contain or limit the spread of the fire,
  - (b) extinguish the fire if possible, and
  - (c) report the fire to the nearest RWED Regional Duty Officer.
- (2) The person must commit, if necessary to meet the requirements of Guideline 22(1),
  - (a) all employees of the person who are working in the area of operation, and
  - (b) all tools and equipment required by and under this Guideline, and
  - (c) any other tools and equipment that are available to the person, including helicopters normally used in the industrial activities to move personnel and equipment to and from the area of operation.

## **23. Site rehabilitation**

- (1) A person who carries out emergency fire control or fire suppression operations must stabilize all fire access trails, fire guards and other fire suppression works to ensure that natural drainage patterns are maintained

- and surface soil erosion is minimized.
- (2) Without limiting Guideline 23(1), a person carrying out rehabilitation must include the following activities:
- (a) stabilization and re-vegetation of soil disturbed or exposed by Heavy Equipment,
  - (b) disposal of slash and debris,
  - (c) stabilization and restoration of the stream channels and stream beds to its original alignment and cross-section, and
  - (d) stabilization of sump and dam locations.



**SCHEDULE 1 FOREST FIRE RISK CLASSIFICATION**

- I. The activities of industrial operations have the risk classifications assigned to them in Table 1.
- II. If an industrial operation includes more than one component activity, each activity is subject to this regulation.
- III. An activity not specifically listed in Table 1 is deemed to be risk classification A.

**Table 1 - Risk Classification by Activity**

<b>Risk Classification A (High)</b>	<b>Risk Classification B (Moderate)</b>	<b>Risk Classification C (Low)</b>
Blasting Bucking – power saw Bucking – tree processor Log barking Log skidding – ground system Log yarding – cable logging Metal cutting, grinding or welding Pipeline construction Rail grinding Sawmilling Silviculture – using small engines Silviculture – using large engines Trail building – using small engines Tree felling	Bucking - at landing Firewood cutting Land clearing Log forwarding Log yarding – helicopter Mining exploration Right of way clearing or maintenance Trenching Wood chipping Wood processing Road right of way grass mowing	Bitumen processing - portable plant Bridge building Drilling Equipment transportation Excavating Fencing Gas or oil well operation Gas Flaring Gravel processing, loading and hauling Guiding, packing or trapping Log sorting or reloading Log hauling Log loading Log scaling Log dumping Mining operations Plant harvesting Power line construction Prospecting Quarrying Railway construction or maintenance Ranch operation Road construction or maintenance Silviculture - using hand tools Surveying or engineering Timber cruising Tourist resort operation Trail building - using hand tools

**SCHEDULE 2****QUANTITIES OF EQUIPMENT REQUIRED  
FOR A FIRE EQUIPMENT CACHE**

<b>Column 1 Number of persons</b>	<b>Column 2 Portable Pump Units</b>	<b>Column 3 Shovels</b>	<b>Column 4 Pulaski tools / Mattocks</b>	<b>Column 5 Hand-tank Pumps</b>
<b>1 – 10</b>	0	0	0	0
<b>11 – 20</b>	1	4	4	2
<b>21 – 40</b>	2	6	6	4
<b>41 – 60</b>	3	10	8	6
<b>61 – 80</b>	4	14	10	8
<b>81 – 100</b>	5	20	12	12
<b>101+</b>	6	22	14	14

**SCHEDULE 3      RESTRICTIONS ON INDUSTRIAL OPERATIONS**

<b>Column 1 Fire Danger Rating (FWI)</b>	<b>Column 2 Risk Classification</b>	<b>Column 3 Restriction</b>	<b>Column 4 Duration</b>
<b>Moderate (6 – 12)</b>	<b>A or B</b>	After 3 consecutive days of Moderate maintain a fire watch after work for 1 hour	Until the fire danger class falls below Moderate.
<b>High – Very High (13 – 24)</b>	<b>A</b>	Maintain a fire watch after work for 1 hour	Until the fire danger class falls below Moderate.
		After 3 consecutive days of High or greater, cease activity between 1300 and 1900 hours each day	Until the fire danger class falls to Moderate for 2 consecutive days, or until the fire danger class falls to Low.
	<b>B</b>	Maintain a fire watch after work for 1 hour	Until the fire danger falls below Moderate
<b>Extreme (25+)</b>	<b>A</b>	Maintain a fire watch after work for 1 hour.	Until the fire danger class falls below Moderate
		After 2 consecutive days of Extreme, cease all activity all day.	Until the fire danger class falls below Extreme, then resume the activity except between the hours of 1 p.m. and 9 p.m. local time, or until the fire danger class falls to Moderate.
	<b>B</b>	Maintain a fire watch after work for 1 hour	Until the fire danger class falls below Moderate
		After 3 consecutive days of Extreme, cease activity between 1300 and 2100 hours each day	Until the fire danger class falls to High for 3 consecutive days, or until the fire danger class falls to Moderate.

## **SCHEDULE 4 FIRE EQUIPMENT STANDARDS**

(Some pump units that are presently available.)

<b>Pump</b>	<b>PSI (3/8" nozzle)</b>	<b>Max Output Vol. Litres/Hour</b>	<b>Max Output Vol. Litres/Min @ 3/8" Nozzle</b>
<b>Ariens 945</b>	N/A	7600*	N/A
<b>Tanaka QCP 121</b>	N/A	6960*	N/A
<b>Tanaka TCP 210</b>	N/A	7600*	N/A
<b>Shindaiwa GP25</b>	35	8800*	N/A
<b>Yamaha YP20G</b>	N/A	32,400***	N/A
<b>Wajax Mini Mark TD48D</b>	55	14,400**	270
<b>Wajax Mark 26</b>	110	20,000**	200
<b>Wajax Mark 3</b>	170	21,600**	240
<b>Hale XL 2000</b>	N/A	135,000****	N/A

Pressure outputs are Manufacture free-flow discharge estimates based on \*1" Discharge hose, \*\*1 1/2" Discharge hose, \*\*\*2" Discharge hose, \*\*\*\*3" Discharge hose.

Document					
<i>File Name</i>		<i>Document Title</i>		<i>HDMS Document #:</i>	
<b>EPS-SRP-0001</b>		<b>SRP Fire Prevention and Suppression Plan</b>		<b>73966144</b>	
<i>Document Owner: (by position)</i>		<i>Document Steward: (by position)</i>		<i>HDMS Form Doc #</i>	
<b>E&amp;PS SRP Operations Manager</b>		<b>E&amp;PS Safety and Loss Prevention Safety Team Lead</b>		<b>Na</b>	
<i>Total # of pages</i>	<i>Issue Code</i>	<i>Original Issue Date:</i>		<i>Review Cycle:</i>	<i>Corporate Reference HDMS #</i>
<b>12</b>	<b>DRAFT</b>	<b>May 06, 2013</b>		<b>2 Year</b>	<b>None</b>
<i>Original Document approved by:</i>		<i>Approver Signature:</i>		<i>Approver Position</i>	
<b>John Butala</b>				<b>E&amp;PS SRP Operations Manager</b>	
<i>Reason for Issue</i>		Original Issue <input type="checkbox"/> Cycle Review <input checked="" type="checkbox"/> Regulatory <input type="checkbox"/> Other (comments) <input type="checkbox"/>			
<i>Revision No.</i>	<i>Date</i>	<i>Reason for issue and Comments</i>	<i>Developed</i>	<i>Checked</i>	<i>Approved</i>
0	May 06, 2013	Original Issue of the E&PS Slater River Fire Prevention and Suppression Plan	(D) E&PS HSE Field Team Lead Stuart Gardner	E&PS HSE Team Lead Gerald Perreault	E&PS SRP Operations Manager John Butala
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## 1 PURPOSE

The purpose of the Fire Prevention and Suppression plan is to provide information and guidance on the prevention, extinguishment and control of any potential or actual fire situation that may arise at the Slater River project site. The intent is to optimize Exploration & Production Services' contributions to the provision of a consistent, safe work environment over the life of the project.

## 2 SCOPE

The Fire Prevention and Suppression Plan is put into place to effectively manage any additional risk of fire that may be caused through the task being performed and the environment in which the work is being conducted. Additionally, this document sets out guidelines for trained personnel who may be required to perform advanced firefighting duties.

### 2.1 DEFINITIONS

#### **Defensive Firefighting**

The mode of manual fire control in which the only fire suppression activities taken are limited to those required to keep a fire from extending from one area to another.

#### **Incipient Fire Fighting**

Firefighting performed inside or outside of an enclosed structure or building when the fire has not progressed beyond incipient stage.

#### **Incipient Stage**

Refers to the severity of a fire where the progression is in the early stage and has not developed beyond that which can be extinguished using portable fire extinguishers or hand lines flowing up to 473 L/min (125 gal/min). A fire is considered to be beyond the incipient stage when the use of thermal protective clothing or self contained breathing apparatus is required or an industrial fire brigade member is required to crawl on the ground below smoke and heat.

## 3 REQUIREMENTS

3.1 The plan will establish the minimum required equipment required to effectively meet the requirements of the NWT legislation and the project needs, taking into account the risk to life, the environment and project assets.

3.2 Potential fire hazards on site will be identified through the Husky and contractor hazard assessment processes. All identified fire hazards will have appropriate controls in place to eliminate or control the hazards to an acceptable level.

3.3 The controls contained within this Fire Prevention and Suppression plan address the existing and potential risks that have been identified at this time, and are not inclusive; any further risk identified during the time of the project must be addressed as they arise and added to the project risk registry.

#### **4 GENERAL CONTROLS**

The following is a list of general controls which shall be in place at all times when high risk operations are taking place on the project site. Specific controls for individual work categories will be addressed later in the document;

1. The Slater River Site Wide Services Manager (Incident Commander) will coordinate all fire prevention activities as required including;
  - a. Fire suppression equipment availability
  - b. Fire Safety Team (FST)
  - c. Update of fire hazard rating
2. A hazard assessment including a “Fire and Explosion Prevention Plan” must be completed prior to the start of any activity where there exists the potential for fire,
3. Firefighting equipment must be available in designated areas during operations as well as in a central cache at the camp facility in line with regulatory requirements,
4. Fire watch to be conducted in high potential areas and during times of increased risk due to weather conditions and activities,
5. On-site Fire Safety Team (FST) that is competent and trained,
6. Regular inspections of firefighting equipment will be conducted, as per regulatory requirements,
7. Wildfire hazard level to be posted in strategic locations throughout the project site and updated as required.

#### **5 DESCRIPTION OF WORK**

Work at the Slater River Project Site will include Exploration (Seismic), Construction, Drilling and Completions. It is important to recognize these sites have robust site specific plans in place that tie into the Area Emergency Response Plan to effectively manage the emergency situations. In order to effectively execute the different aspects of the program, the Husky Logistics Team will employ various methods to transport workers to and from the work sites, all of which could be utilized during an evacuation.

## 6 TASK SPECIFIC RISK AND CONTROLS

### 6.1 AIRCRAFT OPERATIONS

During spring, summer and fall operations the primary method for the movement of personnel and smaller supplies to and from the project site will be air transport.

This will be achieved by using a selection of fixed wing and rotary wing aircraft, all of which present a number of risks including;

- Fuel fires
- Engine fires
- Undercarriage fires
- Main structure fires

In order to be able to effectively control any incident involving an aircraft and prevent the escalation into the environment the following controls shall be adopted:

- Firefighting equipment to be readily available at the airstrip during operations including;
  - Portable fire pump with water supply
  - Fire fighting foam
  - Dry powder extinguisher
  - Fire hose
  - Nozzle(s)
- Fire Safety Team (FST) available during aircraft movements.
- Runway inspections to be completed prior to aircraft movements for removal of FOD.(foreign object debris)
- Aircraft maneuvering area to be kept clear of combustibles at all times during operations.

NOTE: Fire Safety Team (FST) shall take all steps necessary to preserve life, but shall in no way make an entry inside an aircraft involved in a fire situation.

### 6.2 CAMP OPERATIONS

The camp facility at the Slater River Project will be capable of housing approximately 350 personnel and will include an array of bedrooms, communal areas, offices and kitchen facilities. Due to the remote location of the project it should be noted that any loss of camp facility could have a serious impact on the ability to operate effectively on the project site. Since all camps are required to be built to a standard that meets or exceeds regulatory requirements, the risk of fire in a camp facility is low however; the consequences of any fire in a camp environment could be catastrophic due to the large array of activities and personnel on site. Some of the hazards have been identified below but are not all inclusive;

- Kitchen fires
- Electrical fires
- Smoking
- Clothes dryers

In order to minimize the risk of fire in camp facilities and ensure preparedness, a number of measures have been employed, as well as notification and extinguishing equipment including:

- Certified alarm system in place which uses both smoke and heat detection
- Fire doors
- A selection of dry chemical fire extinguishers in various locations around the facility
- Fire hoses
- Certified overhead suppression system located in kitchen area
- Fire blanket in kitchen
- No smoking inside of camp facilities (designated smoking area provided outside)
- Monthly documented inspections of all fire related equipment
- Fire evacuation exercises that meets regulatory requirements
- Fire inspections by Fire safety Team (FST) to ensure compliance with building regulations
- Only certified technicians to carry out maintenance activities on electronic warning systems
- Clothes dryers to be cleaned annually or as required to ensure no lint build up
- Wall heaters to be cleaned annually or as required
- Cooker hoods to be cleaned annually or as required

**NOTE:** The Fire safety Team shall take all steps necessary to preserve life, but shall in no way make an entry inside camp buildings unless it is safe to do so and should only be for rescue purposes.

### **6.3 FUEL FARM**

In order to supply the project with a suitable quantity of fuel required for continuous operations, a tank farm consisting of 65 (fifty five) diesel and 1 (One) gasoline bulk storage tank with a combined total volume of 4,000,000 Liters will be situated on the lease that contains main camp and equipment storage area. This bulk storage area presents fire hazards which could be started through:

- Lightning strike
- Inadequate bonding during large quantity fuel transfer
- Ignition of spills
- Contact with hot surfaces
- Smoking
- Electronic device usage during fueling

To minimize the risk of fire during operation of the fuel farm, and to maximize the effectiveness of an early intervention to a fire in this area, the following control measures and extinguishing media have been put in place:

- Two (2) 150 lb wheeled dry chemical fire extinguishers
- 30 lb dry chemical fire extinguishers at each tank
- All tanks and associated equipment to be properly grounded
- Supply trucks to be properly bonded to tanks when filling and removing product
- No smoking signs present
- No cell phone use allowed
- Catch tanks placed at each fuelling point

- Weekly inspections conducted by Fire Safety Team to ensure removal of combustibles and serviceability of equipment.
- Only authorized personnel will be allowed to use equipment

## 6.4 WILD FIRE

Wild fire in the project area can originate from two sources; the threat from an approaching fire and the threat from a fire caused by industrial activity on the project. Both present an equally significant hazard to the operation of the project. Wild fire has the potential to cause widespread and significant damage which could result in long term closure of the project. The risk of wild fire can be escalated by:

- Lightning strike
- Overheating equipment
- Vegetation being caught against hot exhausts
- Hot work
- Sparks from incinerators or equipment
- Discarded glass items
- Careless smoking

To minimize the risk of wild fire and to ensure effective preparedness in the event of a wild fire, the following measures shall be put in place for the project;

- The wildfire danger rating will be posted on a sign located at the camp
- Fire Watch to be used and kept in place for 1 hour after any hot work
- Fire Safety Team on site trained in wild fire activities
- Fire extinguishers available in all work locations
- Water trucks to be used as required for firefighting support
- All heavy equipment (Large Engines greater than 10 HP and not used for the transportation of people) to be fitted with fire suppression equipment as per the NWT Forest Fire Prevention Guidelines Part 2 Section 6
- A cache of firefighting equipment to be maintained at the central facility as the per the NWT Forest Fire Prevention Guidelines Part 2 Section 11 and will include but not limited to;
  - 14 Water cans (summer operations)
  - 22 Shovels
  - 6 Fire blankets
  - 14 Pulaski tools / Mattocks
  - 12, 30 lb. Dry Chemical Fire Extinguishers
  - 1 Bambi Bucket (During Helicopter operations)
  - 100 m of fire hose
  - 2 Fire fighting Nozzles
  - 6 Portable Pump Units
  - 1 trailer unit for transportation of Portable pump

## 6.5 DRILLING AND COMPLETIONS

Drilling and completions activities at the Slater River Project site will present their own specific fire hazards and will be assigned dedicated fire cover which will be provided by a Contractor company as required. Fire on a well site can be caused by various means including:

- Hot equipment
- Hot work from welding etc.
- Loss of well control
- Flammable gases from well bore
- Flaring activities
- Equipment failure
- Electrical hazards
- Lightning strikes

The Fire Safety Team will provide support and additional equipment should a fire occur on any of the well site locations that is beyond the incipient stage.

## 6.6 CONSTRUCTION OPERATIONS

Construction operations at the Slater River Project will be ongoing throughout the year and will consist of road and lease building activities. Risk of fire can occur during these construction activities through various means including;

- Heavy Equipment operations
- Fuelling activities
- Small equipment operations (Chainsaws, etc.)
- Vehicle and equipment maintenance

To minimize the risk of fire during construction operations and to ensure an effective response should it occur the following controls will be put in place;

- All heavy equipment will be equipped with fire fighting equipment as required under the NWT forest fire prevention guidelines.
- All maintenance shops will be inspected monthly for compliance of fire regulations and house keeping.
- During chainsaw activities a suitable fire extinguisher will be available on site and in close proximity to operations.
- Fuelling of small equipment should be done when engines are cool where possible.

## 7 COMMUNICATION

In the event of a fire occurring at any part of the project a successful outcome is best achieved through a quick response to the incident. To achieve this, a robust communication system will be in place for early notification of both potential and actual fire situations. During the time period specified by the GNWT environmental and natural resource Forest Officer, fire hazard level checks must be done. To obtain fire rating updates or to report any fire situation the Forest officer should be contacted:

- Forrest Officer 24 Hr Emergency Number 1-867-587-3512

If required, the Fire Safety Team will be contacted by radio on the specific channel (to be communicated to all personnel as part of the project orientation) and will be alerted to the situation by the caller repeating Fire, Fire, Fire. On hearing this call all other radio transmissions should cease until the Fire Safety team has responded to the call.

## 8 DUTIES OF THE FIRE SAFETY TEAM (FST)

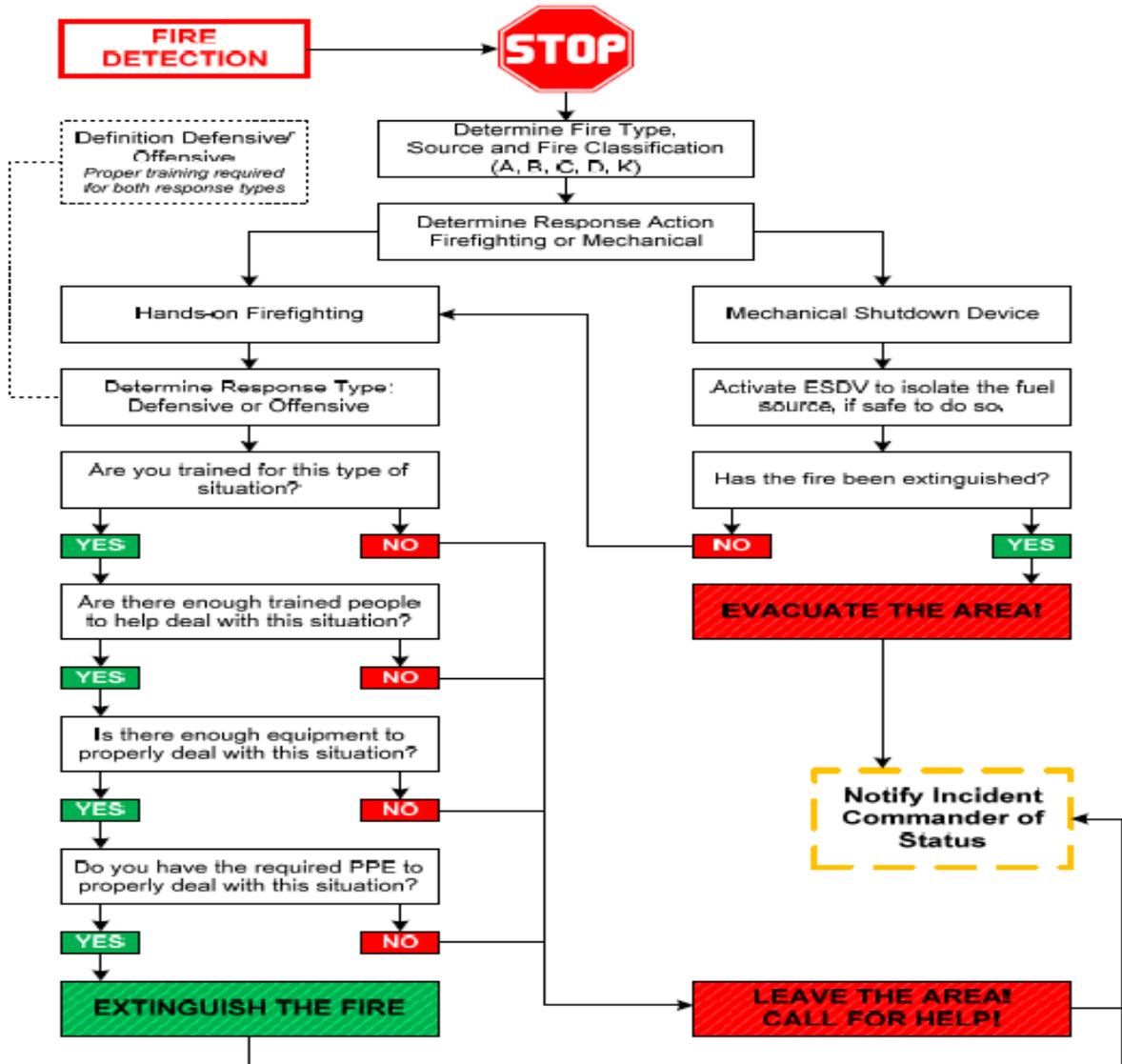
In order to ensure an effective response to any fire situation and to actively work towards the prevention of a fire situation Husky will employ the services of a Fire Safety Team (FST). The FST will actively work towards a goal of zero fires by conducting inspections of workplaces and equipment and coaching staff where necessary on fire prevention activities.

The duties of the FST will include:

- Provide fire cover for landing and departing aircraft and helicopters
- Provide marshaling duties at air strip for aircraft operations
- Conduct runway inspections prior to aircraft movements
- Conduct baggage and cargo handling activities
- Provide cover for hot work operations when required
- Provide wild fire suppression and watch duties
- Conduct all monthly fire suppression equipment checks and maintain documentation
- Ensure that monthly fire safety inspections in all project buildings including camps are being conducted
- Provide reports on all activities to the Field Safety Team Lead monthly
- Actively participate in fire evacuation drills.
- Provide search and rescue duties when safe to do so
- Assist medical staff at the scene of any injury or incident when required
- Provide fire training as required to other project staff
- Ice rescue
- Water rescue
- Any other duties within scope as required

**9 FIRE RESPONSE DECISION TREE**

Below is a flow chart showing the path to be taken in determining the action required or executed in dealing with all fire situations. It should be noted that with the minimum amounts of fire equipment and fire fighting personnel on site, preservation of life should be the foremost priority and Husky does not expect that any response should endanger life in any way.



- For hydrocarbon release fires, proactively mobilize industrial fire responders (HSE Integrated, Firemaster, etc.) with proper training and equipment as required.
- Consider notifying the local fire department (for perimeter control only).

- For all fire situations raise the alarm by pulling an alarm call point or by calling **Fire Fire Fire** on Husky Ops channel if outside of a building
- Before commencing any fire fighting actions notify the Fire Safety team (FST)

## 10 SUMMARY

The threat of fire to the Husky Slater River project is one which presents considerable risk. With proper and consistent application of this plan the threat can be reduced to an acceptable level. It is the responsibility of ALL workers and visitors to the project to ensure that the content of the plan is adhered to at all times and that any fire situation is reported immediately to the Fire Safety Team and Loss Prevention Advisors on Site.

Document					
File Name		Document Title		HDMS Document #:	
EPS-SRP-0002		SRP Site Evacuation Plan		73966149	
Document Owner: (by position)		Document Steward: (by position)		HDMS Form Doc #	
E&PS SRP Operations Manager		E&PS Safety and Loss Prevention Safety Team Lead		Na	
Total # of pages	Issue Code	Original Issue Date:		Review Cycle:	Corporate Reference HDMS #
5	ISU	May 01, 2013		2 Year	None
Original Document approved by:		Approver Signature:		Approver Position	
John Butala				E&PS SRP Operations Manager	
Reason for Issue		Original Issue <input checked="" type="checkbox"/> Cycle Review <input type="checkbox"/> Regulatory <input type="checkbox"/> Other (comments) <input type="checkbox"/>			
Revision No.	Date	Reason for issue and Comments	Developed	Checked	Approved
0	May 01, 2013	Original Issue of the E&PS Slater River Project site evacuation plan	(D) E&PS HSE Field Team Lead Stuart Gardner	E&PS HSE Team Lead Gerald Perreault	E&PS SRP Operations Manager John Butala
Document Use Disclaimer:		To ensure you are using the approved and current revision of this document, please confirm the Revision field contains a number, the Issue Code contains a relevant code for use (i.e. IFU – Issued for Use).			

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## 1.0 PURPOSE

The purpose of this document is to ensure effective measures and processes are in place to manage a safe evacuation of the Slater River Project. The site evacuation plan is put into place to effectively manage the risk to personnel resulting from wild fire, loss of camp facilities or other major incident at, or close to the project site.

## 2.0 SCOPE

The intent is to ensure an evacuation is managed in the most efficient and effective manner with a focus on worker safety, public safety and control and containment of the situation. The intent is to optimize Exploration & Production Services' contributions to the provision of a consistent, safe work environment over the life of the project.

## 3.0 REQUIREMENTS

3.1 The plan will provide the necessary information required to establish the time frame required to be able to safely and effectively evacuate the project, when a major threat to the safety of personnel on site has been identified.

3.2 The fire hazards on site will be established through the Husky hazard assessment process and all necessary steps taken to eliminate or control the identified hazards to an acceptable level.

3.3 The risks and controls contained within this site evacuation plan are not inclusive and any additional risk identified during the execution of the project will be addressed as required.

## 4.0 DESCRIPTION OF WORK

Work at the Slater River Project site will include exploration (seismic), construction, drilling and completions. It is important to recognize that these sites have robust site specific plans in place that tie into the area emergency response plan to effectively manage any emergency situation. In order to effectively execute the different aspects of the program the Logistics Team will employ various methods to transport workers to and from the work sites, all of which could be utilized during an evacuation

## 5.0 HAZARDS IDENTIFIED

Hazards have been identified that would have the potential to initiate an evacuation of the project;

5.1 An approaching wildfire

5.2 A loss of camp facilities

## 6.0 GENERAL CONTROLS

The following are a list of general controls which shall be in place at all times when egress from the project area is limited:

- Project On-site Supervisors to monitor wildfire threat when appropriate
- Transportation modes will be based upon the number of on-site personnel and be available for immediate dispatch
- Alternate muster/evacuation areas to be identified in the event the airstrip is unusable
- Alternate shelter has been identified as a contingency for camp loss and are listed in the Slater River ERP
- Effective communications to be available in the event of the loss of camp facilities

## 7.0 SPECIFIC RISKS AND CONTROLS

### 7.1 WILD FIRE

During summer operations the risk of wild fire in the area may pose a significant risk to the project site. In order to be able to effectively control any incident involving a wildfire and successfully evacuate all personnel in a timely manner the following controls should be in place:

- Project On-site Supervisors to establish the risk of wild fire in the area during the period of May 1 to September 30 as identified in NWT guidelines and during periods of escalating risk due to dry conditions or site operations.
- On notification of a fire in the area from the Forest Officer, wind direction, speed and the scale involved should be ascertained as soon as possible.
- Transportation companies must be alerted and put on standby.
- The Site Wide Services Manager (Incident Commander) will, on receipt of all the relevant information, make the decision to evacuate.
- Project On-site Supervisors at this point must secure their work site and safely suspend operations.
- If the decision to evacuate site is given, then the procedures for loss of camp facility should be followed.

### 7.2 LOSS OF CAMP FACILITY

The camp facility at the Slater River Project will be capable of housing approximately 300 personnel and will include an array of bedrooms, communal areas, offices and kitchen facilities. Due to the remote location of the project, it should be noted that any loss of camp facility could result in the need to evacuate the project site. Provisions that consider inclement weather will be in place. In order to effectively manage a situation involving loss of camp facilities the following controls will be in place;

- Temporary shelter identified for maximum people on site;
- Alternate communications outside of camp facility to be in place;
- The Site Wide Services Manager (Incident Commander) on receipt of a call notifying him/her of a loss of camp facilities will mobilize sufficient and appropriate transport to the project site for evacuation of personnel;
- Alternate accommodation in the Norman Wells / Tulita area has been identified for temporary shelter as part of the North West Territories – Emergency Response plan;

## 8.0 WILD FIRE SPREAD

Below is a chart showing the rate of fire spread for the fuel type C-2. This fuel type is made up of densely populated stands of upland and lowland Black Spruce and is the common fuel type in the project area. This chart should be used by project leaders in determining the time frame required to evacuate all personnel safely from site in the event of an approaching wildfire.

Wind Speed in km/h	Fire Spread in meters / minute	Class and energy	Description
0	4.0	Class 4 2,000 – 4,000 kw	Intermittent crown fire
10	7.0	Class 5 4,000 - 10,000 kw	Intermittent crown fire
20	14.0	Class 6 > 10,000 kw	Continuous crown fire
30	27.0	Class 6 > 10,000 kw	Continuous crown fire

## 9.0 TRANSPORTATION

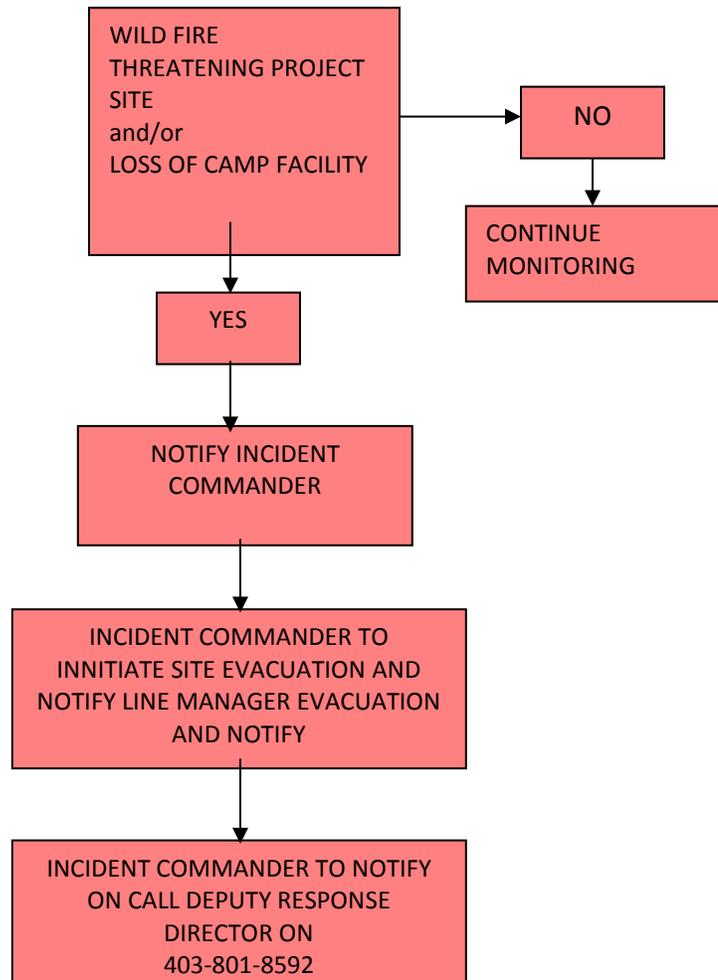
In the event of a need to evacuate the project area the following resources will be contacted

- Canadian Helicopters (Norman Wells)                      867 – 587 – 2136 **(24hrs)**
- Sahtu Helicopters (Norman Wells)                            867 – 587 – 2827
- North Wright Airways (Norman Wells)                      867 – 587 – 2288 **(24hrs)**

If due to smoke or weather conditions aircraft are unable to fly or land at site, arrangements should be made to move all personnel to an area of safety and / or river transport should be considered.

### 10.0 EVACUATION DECISION FLOW CHART

Below is a flow chart showing the action(s) to be taken in deciding to evacuate the project area



### 11.0 SUMMARY

During the time when the ice crossing at the Slater River Project is unavailable for use, the need to have a robust plan in place for effective evacuation of the project area is of high importance. Due to the remote location of the project site, this process could be a lengthy one even when all aspects of the plan work well. With this in mind, it is important that the plan is rehearsed and that all personnel are aware of their individual responsibilities in relation to the execution of the plan. It is Husky’s intention to provide a safe work environment for all workers and removal of these workers from a potentially harmful situation forms an important part of the ERP.