Community Emergency Plan

Pemberton Meadows

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Key definitions

Emergency	An event that requires prompt coordination of actions to protect the health, safety or welfare of people, or to limit damage to property or the environment.
Hazard	A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.
Resilience	Resilience is the capacity to adapt; by persevering, recuperating or changing to reach and maintain an acceptable level of functioning. Disaster resilience is built through empowering organizations, communities and society to share responsibility for keeping hazards from becoming disasters.
Risk	The combination of the likelihood and the consequence of a specified hazard event happening.
Vulnerability	Physical, social, economic and environmental factors or processes, that increase the susceptibility of a community to negative impacts from hazards. It is also a measure of how well prepared and equipped a community is to minimize impacts and cope with hazards.

Community Emergency Plan

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2017

Introduction

The SLRD Emergency Management Program provides emergency management services to the ~5,000 SLRD residents in the four Electoral Areas and partners closely with member municipalities. In addition to the Emergency Management Program, the SLRD funds and/or operates select Emergency Services in the region including:

- 9-1-1 Services
- Diking and drainage in Electoral Area D
- Fire and Rescue Services
- Wildfire Fuel Management Program.

Major emergencies and disasters are on the increase in Canada and worldwide. Disaster effects may be direct (e.g. damage to house, loss of income) or indirect (e.g. increased insurance premiums, reduced air quality due to smoke from wildfires elsewhere).

A number of communities in the SLRD are geographically isolated from traditional first responder organizations such as fire, police and emergency medical services. Communications and other infrastructure may be limited or prone to outages. The effect of this geographical separation is that communities will likely lead their own response, making community knowledge, preparation and skill building a vital aspect of emergency preparedness and increasing the resilience of these communities to adverse events.

The purpose of a Community Risk Assessment (CRA) is to guide practical steps in preparedness, response, recovery and mitigation that reduce both the likelihood of emergencies and the consequences when disaster cannot be avoided. Risk information also informs community residents, business owners, and institution managers of the hazards to expect and how best to prepare for them. Further, A CRA provides a platform from which to progress community-level emergency management and evacuation policy and planning.

A Community Action Plan (CAP) provides a blueprint for communities to increase their resilience through increasing skills, knowledge and connectedness – benefiting the community before a major emergency, during response and through the recovery process.

Community Overview

Pemberton Meadows (PM) is a rural residential farming and equestrian area some 17 kilometers north of the Village of Pemberton and adjacent to the Lillooet and Ryan rivers, with the Pemberton Meadows Road being the main access road through the community. Originally founded on agriculture, forestry and mining it's now shifting to include growing agri-tourism, service based Industries and recreation tourism along with a new demographic that includes other business start ups and professionals who telecommute.

The community of ~900 fulltime residents is spread out along the Pemberton Meadows Road and Ryan River Road with most development on low lying floodplain land. Pemberton Meadows Road is regularly inundated at points and has been washed out by historical flood events. Flood is the most present hazard in the area with debris flows, severe storms and interface fire also a concern. The community has the potential to become isolated due to the effects of any of these hazards.

Demographics

Mainly full time residents and farming property owners

Land Use

Single family homes, agriculture and forestry.

Critical infrastructure

Drinking Water	Independent water supply per household from well, tank or stream filtration.
Sanitary/Waste Water Treatment	Septic tank or field.
Electrical Power Systems	BC Hydro supply available to all residences
Gas Heating Systems	No
Communications	Landline, internet access. Unreliable or no cellphone reception depending on location.

Response Capabilities

Structural fire	Structural fire service provided under contract by Pemberton Fire Rescue Service.
Wildland interface fire	Crews dispatched from Pemberton.
Medical	Nearest BCAS base is Pemberton Station 219
Police	Nearest RCMP detachment in Pemberton
Evacuation	Opportunity for evacuation training from SLRD staff.
Communication	Landline and internet access available, subject to any infrastructure impacts. Cellphone service unreliable, depending on location.

Hazard, Risk and Evacuation

PEMBERTON MEADOWS HAZARD PROFILE

Flood	Debris Flow/ Landslide	Interface Fire	Severe Storm/ Utility failure	Earthquake	Hazardous Material

KEY:*

HIGH RISK

MODERATE RISK

LOW RISK

UNLIKELY

*Note that risk does not equal impact. A low risk event may still occur with high impact.

The risk assessment examines the high and moderate risk hazards.

Evacuation Routes

Evacuation would be south along the Pemberton Meadows Road or Ryan River Road towards the Village of Pemberton at the direction of first responders. The recommended evacuation route will also be printed on the official evacuation notice delivered by first responders and/or published on the SLRD website. No obvious feasible vehicular alternatives, and also noting the significant potential for areas of the community to become isolated if their evacuation route becomes impassable due to washout or fire at a single point.

While water assisted evacuation is conceivable, it is improbable due to the likely hazardous river conditions that would most often accompany the reason for evacuation. If evacuation by road is not possible and sheltering in place is unsafe, then helicopter-assisted evacuation would become necessary, with Pemberton or Whistler as the transfer point.

Types of Evacuation

Evacuation Alert	This is the time to get ready to leave, putting together 'grab and go' bags with essential supplies, papers and prescriptions, and making any other arrangements to leave the property with all household members and pets. Residents may self-evacuate (voluntary) during this time, particularly if they have mobility issues or health conditions that may make it difficult to evacuate quickly. This is also the time to move livestock to safer areas.
Evacuation Order	Mandatory evacuation occurs when a population is ordered to leave a defined area according to a formal written document that outlines the impact area and why an evacuation is necessary.
Shelter-in-Place	Essentially, an instruction to the public to stay inside for safety reasons. It may also mean "seal the room", i.e. take steps to stop outside smoke or other contaminants from entering the room.
Evacuation Rescind	Formal notification that it is safe to return to the evacuated area. The affected area may still be under an Evacuation Alert under further notice, if the hazard still presents a threat.

Flood

The Lillooet River system is subject to frequent flooding with the majority of development and the two access roads located in the floodplain. Extreme precipitation events have repeatedly occurred, with the most recent in 2016. Climate change may be increasing the risk of flooding and the Pemberton Valley Dyking District (PVDD) has commissioned a study to update the floodplain mapping including climate change and debris flood/flow considerations. Flooding may originate from the Lillooet or Ryan Rivers, from feeder creeks and streams, from direct torrential rainfall or a combination these sources. In terms of stream flow, the flood risk comes from both bank overtopping and an outburst flood scenario, where a collection of woody debris and rocks become lodged in one area by high flows, forming a barrier. The water pooling behind the barrier can rapidly cause flooding of properties nearby, but the greater hazard is from the volume of water and debris released suddenly when the temporary dam gives way.

EVACUATION PROTOCOL:

Evacuate if directed by first responders (imminent threat, tactical evacuation), and/or if an evacuation order is issued by the SLRD due to conditions being assessed as dangerous enough to warrant an evacuation of identified properties. First responders and the SLRD will take a conservative approach in assessing flood risk evacuation trigger points, to ensure resident safety.

Evacuation Alert Trigger Points

An evacuation alert would be triggered by Environment Canada, the River Forecast Centre forecasting conditions that trigger a flood watch, and/or onsite observation of those conditions.

Evacuation Order Trigger Points

Evacuate if heavy/torrential rainfall is occurring, and ANY of the following are observed:

- A flood warning is issued by the River Forecast Centre
- Sudden lack of flow in creeks during wet weather
- Landslides occurring in the general area, or sounds of landslides occurring
- Forecast rainfall is occurring, and stream full conditions are occurring or close to occurring.

Debris Flow/Landslide

Landslides include a range of downhill earth movements, including slope failure, rock falls and debris flows. Landslides can be extremely destructive and are caused by a number of pre-existing and contributing factors that cause the slope to fail, including heavy rainfall or rapid

snowmelt, erosion, poor construction practices, freezing and thawing, earthquakes and volcanic eruptions.

Concave slopes like gullies and ravines are particularly susceptible to debris flows because they tend to concentrate surface water runoff and accumulate surface water and loose soil. Debris flows can be initiated due to both natural factors and man-made intervention.

The Mt. Meager complex, located upstream on the Pemberton Meadows, poses a significant threat to the Pemberton Meadows community. In 2010, the largest recorded landslide in Canada occurred at this location, impounding the Lillooet River and Capricorn Creek. Outburst flooding from such another such event is likely in the future, and the SLRD works with other local governments and the Pemberton Valley Dyking District to monitor the Upper Lillooet River for signs of catastrophic landslides upstream.

With the changing climate the Pemberton Meadows landslide risk may also be changing, and updated floodplain mapping should offer new data to assess this associated risk. Additionally, a study is underway to assess the landslide risk and associated outburst flood risk from Mount Currie. The study results, due for completion in early 2018 will be used to update this Community Emergency Plan where applicable.

EVACUATION PROTOCOL:

Evacuate if directed by first responders (imminent threat, tactical evacuation), and/or if an evacuation order is issued by the SLRD due to conditions being assessed as dangerous enough to warrant an evacuation of identified properties. First responders and the SLRD will take a conservative approach in assessing debris flow evacuation trigger points, to ensure resident safety. Evacuation will apply to all identified properties at risk, which may result in a partial for full evacuation of the affected community. Evacuation route is preferably via Pemberton Meadows Road towards Pemberton but if the community is isolated by blocked /impassable roads, then sheltering in place and air assisted evacuation may be necessary.

Trigger points for evacuation are taken from the BC Forest Service Wet Weather Safety Guidelines (rainfall and snow melt), advice from provincial experts, and conditions at the time.

Evacuation Alert Trigger Points

- Rainfall event forecast of 25 – 45mm or more in less than 24 hours
- Rainfall event forecast of 25 – 45mm or more in less than 24 hours, plus snow melt calculations (see table #1 below)
- Cumulative rainfall of 40mm or more over >5 days, with additional continued rain forecast and/or snow melt calculations (see table #1 below).

Snow Melt Soil Moisture Input

Snow melt is an important factor in determining the total soil moisture input. The following tables provide guidance as to the amount of snow melt **that must be added** to the precipitation forecast or recorded in a rain gauge in applicable situations. Snow melt must be considered at or above the slope where the melt event is occurring.

Table #1: 24 Hour Snowmelt additions during rain-on-snow events

Average temperature	Open Area			Forested Area		
	Wind*			Wind*		
	Low	Moderate	High	Low	Moderate	High
0.5-2.0˚C	3mm	10mm	25mm	1mm	5mm	11mm
2.1 – 5.0˚C	15mm	35mm	75mm	5mm	10mm	25mm
5.1-10.0˚C	25mm	70mm	120mm	10mm	28mm	40mm
10.1-15˚C	35mm	95mm	160mm	15mm	40mm	60mm

**Low Wind* (<10 km/hr): Leaves and small twigs in constant motion speed; wind extends light flag

Moderate Wind (10-20km/hr, gusts >30km/hr)**:** Small trees sway, maps/paper difficult to hold still.

High Wind (>20km/hr, gusts >40km/hr)**:** Whole trees in motion, clouds moving rapidly, rain blowing sideways.

Tactical Evacuation Trigger Points

Heavy rainfall is occurring, and ANY of the following are observed:

- Sudden muddy water in creeks (especially in gullies)
- Sudden lack of flow in creeks during wet weather
- Cracks appearing in the soil
- Small (anything ≥1m x 1m) sloughs of soil occurring
- Landslides occurring in the general area, or sounds of landslides occurring
- Blocked culverts
- Forecast rainfall is occurring, and stream full conditions are occurring or close to occurring.
- Thunderstorm or heavy rainfall event not forecast, generating torrential downpours and/or observed debris activity in the affected slide areas.
- Cumulative rainfall of 45mm over >5 days or more, with additional continued rain forecast, plus additional snow melt calculations from table #1 (above).

Interface Fire

The Pemberton Meadows community is located in a semi-wooded environment with a mix of deciduous and evergreen trees near development. While not in a heavily forested environment, drier summers are resulting in conditions that increase the interface fire risk. Potential ignition of an interface fire includes a lightning or human caused forest fire, a structural fire in the community that spreads to the wildland area, and ignition relating to a vehicle collision or sparking that spreads.

The consequences of an interface fire event have the potential to be severe depending on ignition point, dryness, and wind conditions.

EVACUATION PROTOCOL:

At the **Evacuation Alert** stage:

- Residents with mobility or chronic health issues may choose to voluntarily evacuate to ensure their safety and continuity of care. If they choose to stay at this time, they should contact the SLRD Emergency Program staff to discuss their situation and/or make arrangements with a neighbor if they do not have a vehicle, and their primary healthcare provider if evacuation is medically complicated (e.g. dialysis, oxygen tanks).
- All other residents should make preparations to leave, ensuring that they have a plan for the safe evacuation of all people and pets, gather essential documents, medicines and necessities of food, clothing and other items.
- Make preparations to move livestock outside of the area under threat. There are provisions for reimbursement of some costs associated with relocating commercial live stock. Refer to the SLRD Commercial Livestock Relocation Guide on the website – link provided at the end of this document.

At the **Evacuation Order or Tactical Evacuation** stage:

- At the direction of BC Wildfire Service, RCMP or other authorized first responders, residents will evacuate according to the evacuation route directions given.
- All residents must leave, ensuring that all people and pets in their household safely evacuate, and taking the previously gathered essential documents, medicines, necessities of food, clothing and other items. If these items have not been gathered in advance, there may be no time to take anything at the time of evacuation.
- Emergency Support Services (ESS) will be provided to those evacuated, including emergency accommodation if required.

Severe Storm (All Seasons)

The community may become temporarily isolated by a severe winter snow storm or summer storm with high winds that down trees and potentially knock out power lines nearby. Winter

heating is a concern, especially for vulnerable residents. Extended power outages presents health and safety risks including food spoilage, shortage and inability to store medications requiring refrigeration (e.g. insulin). Downed landlines would leave the areas of the community without 9-1-1 service. Blocked access of Pemberton Meadows Road or Ryan River Road compromises community access to emergency health services.

EVACUATION PROTOCOL:

Shelter in place until downed power lines are confirmed by first responders or BC Hydro as no longer hazardous. If emergency assistance is required, call 9-1-1 (if able). If a storm related evacuation is required, follow the instructions of first responders and official information from the SLRD. In the event of evacuation, Emergency Support Services (ESS) will be provided to those evacuated, including emergency accommodation if required.

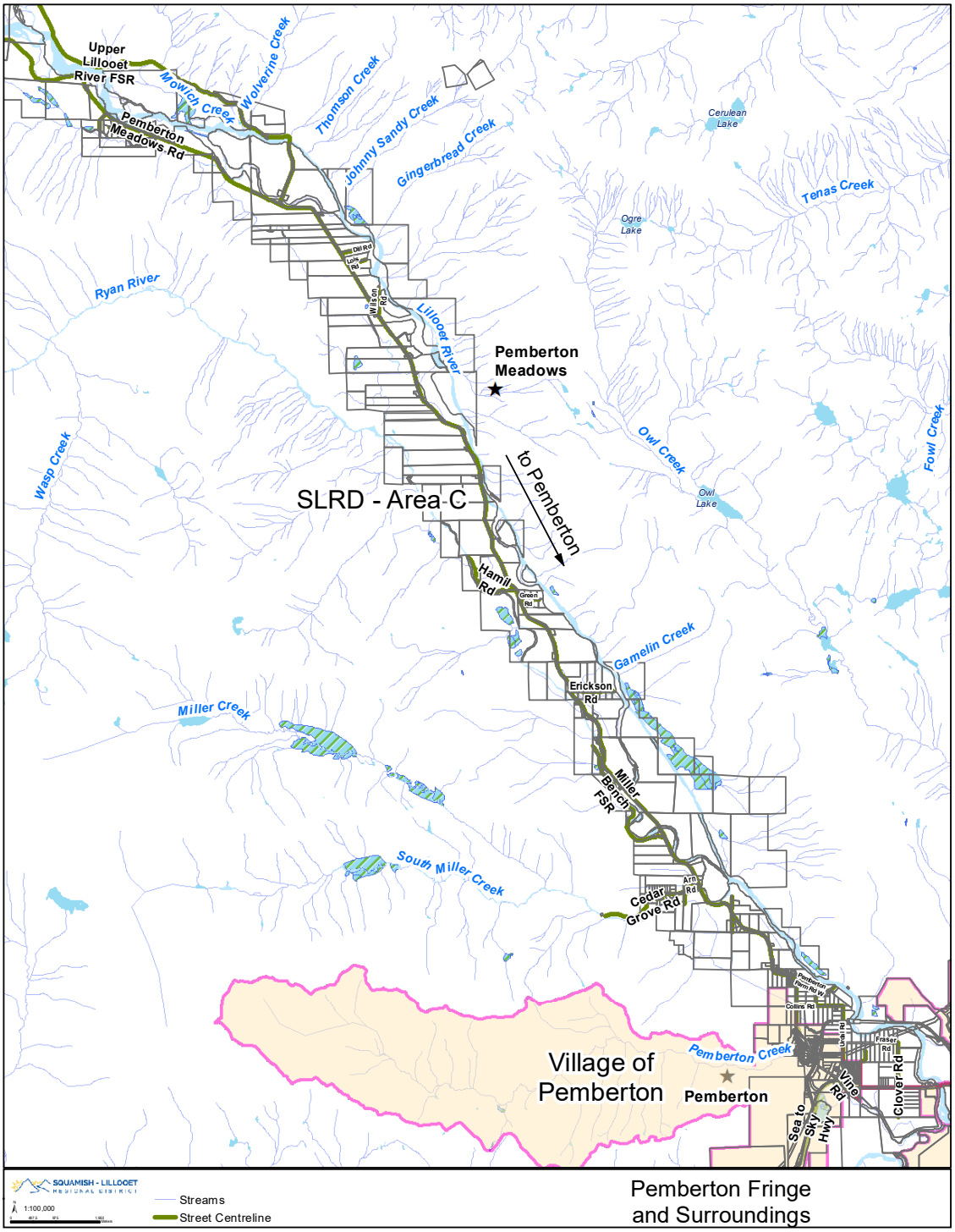
Residents who are vulnerable due to health conditions should discuss a plan in advance with their primary healthcare provider. This may include voluntary self-evacuation when a severe storm event is forecast, access to a back up power supply, and additional supplies of medication or an emergency prescription.

SLRD ALERT.
Be in the know, not in the dark.

Free emergency notification service
direct from the SLRD to you.
Text, voice message and email options

Sign up: http://www.slrd.bc.ca/SLRDAlert

Community Map – Pemberton Meadows



Community Action Plan

The SLRD will work with community representatives every three (3) years to review, assess and update the Community Action Plan.

Historical Actions

- The presence of agricultural and other heavy equipment, along with skilled operators, makes the Pemberton Meadows more resilient.
- Independent water and waste treatment system may be a protective element in the event of damaged infrastructure in neighbouring communities.

Current and Future Potential Actions by the Community

- Establish a **Neighbourhood Emergency Team** (NET) with members who have completed a criminal record check (free for volunteers and required in order to be placed in many volunteer roles during response). The SLRD can support the NET through training in basic emergency preparedness, evacuation notification, recovery considerations and other relevant topics that facilitate a two-way knowledge exchange of local government emergency processes and community capacity building. The SLRD can also connect communities to funding when it is available (e.g. FireSmart) and may sponsor a training session by an external provider for multiple communities if budget is available and there is sufficient demand. NET team members would be utilised in a disaster response as qualified volunteers under the direction of the relevant agency. The size of the NET, its organization and the level of training is at the discretion of the community and is independent of the SLRD.

  NET team members may be progressively trained in:

  - First Aid and simple triage
  - Evacuation Processes
  - Radio Communication
  - Locating victims and resources
  - BC Wildfire S-100 Basic Fire Suppression and Safety

- Work to achieve official FireSmart Community status
- Work with the SLRD to develop a basic Disaster Recovery Plan
- Identify vulnerable residents and develop a plan with them for their continued safety in the event of a major emergency (EMBC resources available to assist planning)
- Identify and document skilled individuals in the community (e.g. doctors, nurses, electricians, engineers).
- Practice evacuation notification with the delivery of emergency preparedness public information resources to each house (these resources available through the SLRD)

- Campaign to get all residents signed up to the SLRD Alert emergency mass notification system for direct communication by email, text and landline from SLRD to residents and their nominated emergency contacts.
- The SLRD recommends the community purchase of a satellite phone, to be held by the chair of the Neighbourhood Emergency Team and available to the community at all times.

Looking for more information to make your community Disaster Resilient?

SLRD	**www.slrd.bc.ca/services/emergency-management**
GENERAL	**http://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery**
ANIMALS	**http://www.cdart.org/beprepared.htm**
COMMERCIAL LIVESTOCK	**https://www.slrd.bc.ca/inside-slrd/reports/commercial-livestock-relocation-guide**
FIRE SMART	**www.firesmartcanada.ca**