

Community Emergency Plan

Lillooet Lake Estates & Heather Jean Properties

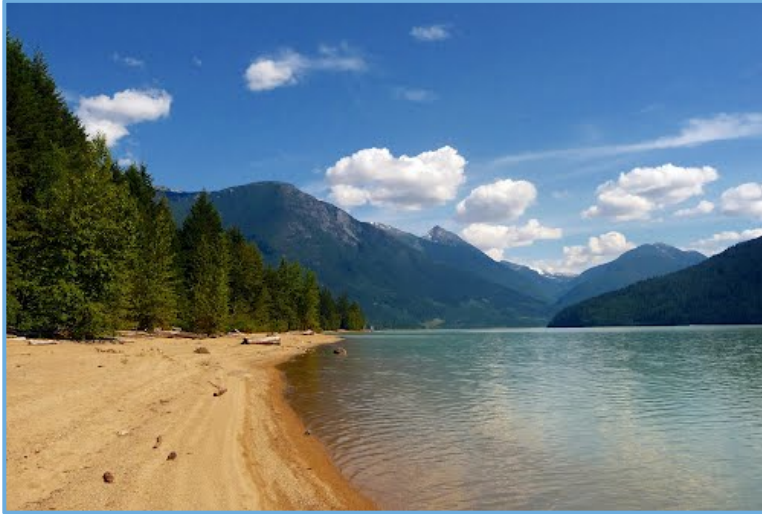


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Key definitions

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

Lillooet Lake Estates and Heather Jean Properties

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 advance 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

The Lillooet Lake Estates (LLE) is a 152-lot subdivision on the northeast side of Lillooet Lake in the Pemberton Valley of British Columbia. Heather Jean Properties (HJP) is an 18-site development that shares District Lot 4901 with LLE. Each group operates as a separate entity. The communities are about seven kilometres south of Highway 99 on the In-SHUCK-ch Forest Service Road (formerly known as the Pemberton – Douglas Forest Service Road).

In effect, LLE is an unincorporated village. The administrator is a company called Lillooet Lake Estates Ltd., which serves as a defacto village government as a result of the founding of the estates through a Land Use Contract with the Squamish Lillooet Regional District and the Province of British Columbia.

Lillooet Lake Estates Ltd. is run by a Board of Directors who are elected annually by means of a “section” or “ward” system whereby 6 neighbourhood groups of property owners elect 2 representatives each in order to form a group of 12 Directors. Lillooet Lake Estates acts like a strata property manager and provides municipal services for the residents of Lillooet Lake Estates such as water, road improvements, parks, fire protection, snow clearing, etc.

LLE and HJP comprise both full and part time residents and is a fairly ‘tightly-knit’ community that has historically communicated actively and organised for collective clean up after past adverse weather events. LLE has ~30 full time residents. These communities are situated within a geographical context that illustrates both why people are attracted to the area and what makes them exposed to higher risk of hazard impacts from a number of sources. Situated lakeside, amongst trees and with a rock face of some 2,000m rising behind, LLE offers a setting of peace and natural beauty. Equally, the trees constitute an interface fire risk, the rock face presents a debris flow hazard that has been the source of considerable study and the lakefront location limits evacuation options for many to one road out of the area. There is extremely limited cell phone reception in the community; landline phone and power lines are exposed to outages at several points. Power supply is entirely ‘off-grid’ with electricity supplied by solar panels and diesel generators.

Demographics

A mix of full time and seasonal residents.

Land Use

Single family homes and some common land areas.

Critical infrastructure

Drinking Water	Filtered drinking water supplied by LLE waterworks facility
Sanitary/Waste Water Treatment	Properties have independent septic field or tank
Electrical Power Systems	Independent and off-grid power systems.
Gas Heating Systems	None
Communications	Landline, internet access. No cellphone reception.

Response Capabilities

Structural fire	No structural fire service
Wildland interface fire	Crews dispatched from Pemberton. Opportunity for more local training
Medical	Nearest BCAS base is in Pemberton
Police	Nearest RCMP detachment in Pemberton
Evacuation	Currently developing evacuation plans (2017)
Communication	Landline and internet access available, subject to any infrastructure impacts.

Hazard, Risk and Evacuation

LLE AND HJP HAZARD PROFILE

Flood	Debris Flow/ Landslide	Interface Fire	Severe Storm/ Utility failure	Earthquake	Hazardous Material
Yellow	Red	Red	Orange	Yellow	Green

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 of the following three hazards examines the two communities together. Hazard exposure may vary between Strata due to variables such as geographical differences and additional mitigation actions taken by one of the communities.

Evacuation Routes

Dependent on impacts and location of threat, evacuation route will be the In-SHUCK-ch Forest Service Road toward Pemberton at the direction of first responders. No vehicular alternatives. The recommended evacuation route will also be printed on the official evacuation notice delivered by first responders and/or published on the SLRD website.

Community Muster Points, if required:

1. At the firehall – gate 2 for gate 1, 2 and 4 (west of Catiline Creek)
2. At the top of gate 7 for gate 5,6,7,8,9 and 10 (east of Catiline Creek)

The Muster Point will be used if evacuation is by RCMP escort due to road conditions, or to receive additional information or supplies (e.g. bottled water) before evacuating.

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.

Debris Flow/Landslide

Debris flows are very fast-moving, liquefied landslides that carry soil and other debris including boulders, and vegetation. Debris flows are most often triggered during periods of intensive rainfall resulting in high soil saturation levels but can also be triggered by rockfall or avalanche

on unstable slopes. 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 the result of natural factors and man-made interventions.

LLE is particularly exposed to the debris flow hazard arising from the Catiline Creek drainage, which acts as a debris chute when material is dislodged further up the steep slopes immediately behind LLE. BGC Engineering reports that the potential frequency and magnitude of debris flow events in the Catiline Creek Drainage renders parts of the LLE community unsafe to occupy.

Past Events

August 30, 2013: After intense localised rainfall, a debris flow travelled down the Catiline Creek drainage, overran the boat launch and reached the beach. The FSR was impacted and access cut off by deposited debris. The north lobe of the flow swept over the driveway of a house, pushed a small pickup truck into the lake, and destroyed a boat rack full of boats. Debris was measured as being on average 1-2 m thick along the margins and <1 m thick along the centre of the track, with a volume of perhaps 2000-6000 m³.

MFLNRO report 2013: "Given the density of settlement at Lillooet Lake Estates, and the history of recent debris flow in 2004, 2010 and 2013, it is surprising that no significant residential property damage has occurred, nor loss of life or limb. This most recent debris flow highlights the existing and future landslide risk at this site. If compared to existing hazard/risk standards such as Cave (1993), MoTI (2009) or those adopted recently by the District of North Vancouver (BGC 2006), the landslide risk facing residences at Lillooet Lake Estates would likely be judged to be unacceptable. Under existing conditions, it is judged that it is only a matter of time before there is a fatality at Lillooet Lake Estates."

Hazard Areas

Red and purple zones in the map (below) are in the highest hazard areas.

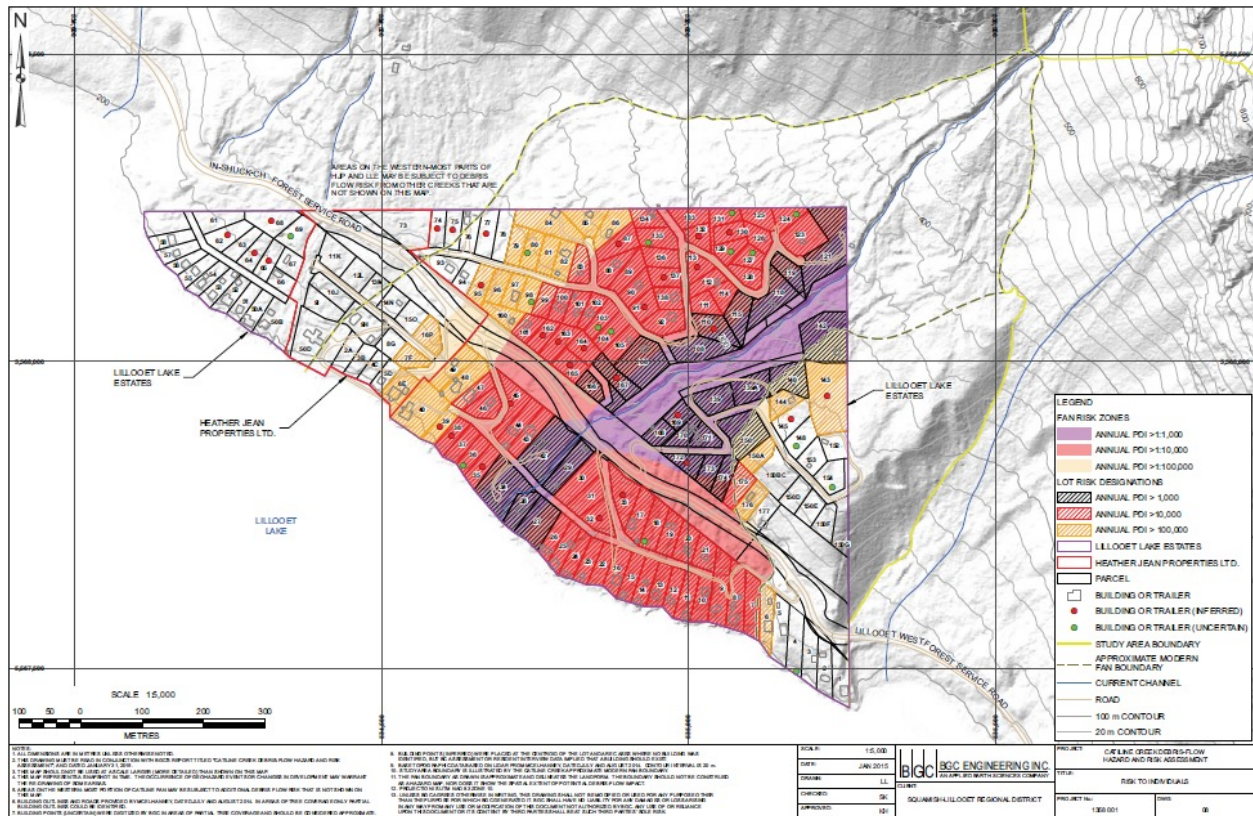


Figure X: Risk to Individuals Map (BCG Engineering, 2015)

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 risk evacuation trigger points, to ensure resident safety. Evacuation will apply to all identified properties at risk, which may result in a partial or full evacuation of the affected community. Evacuation route will depend on the location of the slide, and whether a potential evacuation route is blocked due to a related landslide event.

Trigger points for evacuation are taken from the BC Forest Service Wet Weather Safety Guidelines (rainfall and snow melt).

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 $\geq 1\text{m} \times 1\text{m}$) 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

LLE and HJP are located in a wildfire environment. Wildfires will happen – exclusion is not a choice. The variables in a wildfire scenario are:

- when the fire occurs, and
- where the fire occurs.

During the summer of 2015, a wildfire started at Strawberry Point in the vicinity of LLE. Smaller fires have been a common occurrence during summer months.

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, or ignition relating to a vehicle accident or sparking.

The consequences of an Interface Fire event have the potential to be severe/catastrophic for the communities.

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.

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 communities may become temporarily isolated by a severe winter snow storm or summer storm with high winds that down trees, create washouts or avulsions along the Highline Road and potentially knock out phone access. Extended phone outages and isolation present health and safety risks including no 9-1-1 service. Blocked roads compromise community access to emergency health services and supply lines.

EVACUATION PROTOCOL:

Shelter in place (if relevant) 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.

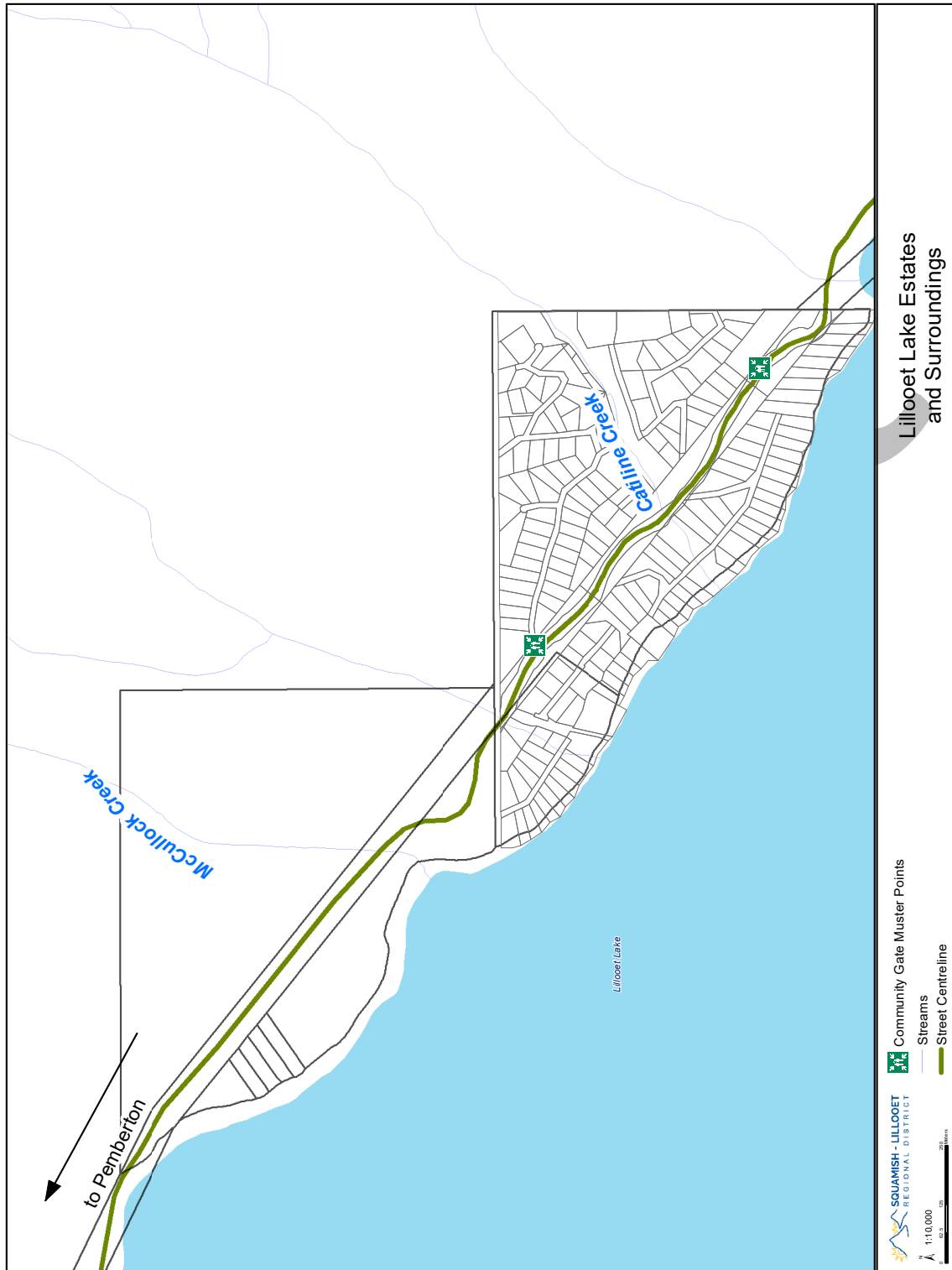
Be in the know, not in the dark.

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 – Lillooet Lake Estates and Heather Jean Properties



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

- Independent water and waste treatment system may be a protective element in the event of damaged infrastructure in neighbouring communities.
- Initial discussions between strata management and LLE regarding evacuation planning.

Current and Future Potential Actions by the Community

- Establish a **Neighbourhood Emergency Team (NET)** with members from both Strata, 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
- LLE and HJP to progressively work on FireSmart activities to lower their risk and qualify for 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.
- Identify and purchase suitable satellite communication technology to ensure 9-1-1 and other emergency communication remains possible when other comms infrastructure is impacted.

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
FIRE SMART	www.firesmartcanada.ca