

Technical Memorandum

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Via Email:	Joe Mitchell <jmitchell@summerland.ca>
To:	Joe Mitchell, Director of Works and Infrastructure, Deputy CAO
From:	Brittany Linnett, P.Eng., Senior Geotechnical Engineer
cc:	Bobby Williamson, Manager of Development Service
Date:	August 24, 2026
Re:	Preliminary Slope Hazard Assessment, Garnet Valley South Summerland, BC
Project No.	2605393

Introduction

Brittany Linnett, P.Eng. of Terrane Geoscience Inc (Terrane) was contacted by Bobby Williamson of the District of Summerland (DoS), on August 16, 2026 regarding slope hazard assessments for areas of Summerland impacted by the Bald Range Fire. From information discussed in a meeting on August 16, 2026 there are multiple areas of Summerland where the Bald Range Fire burnt slopes uphill of homes, potentially causing dangerous conditions. A consulting rate sheet was requested and provided by Terrane on August 16, 2026. Brittany Linnett, P.Eng., completed field assessments for Deer Ridge and the north side of Prairie Valley on August 18, 2026.

The Bald Range Fire started on August 7, 2026 and at the time of this memorandum had burned 24,096 Hectares including portions of the Hunters Hill, Cartwright, Garnet Valley, Deer Ridge, and outlying areas of the DoS. This memorandum focuses on the Garnet Valley South neighbourhood and the immediate surroundings, which is located north of downtown Summerland (See Figure 1).

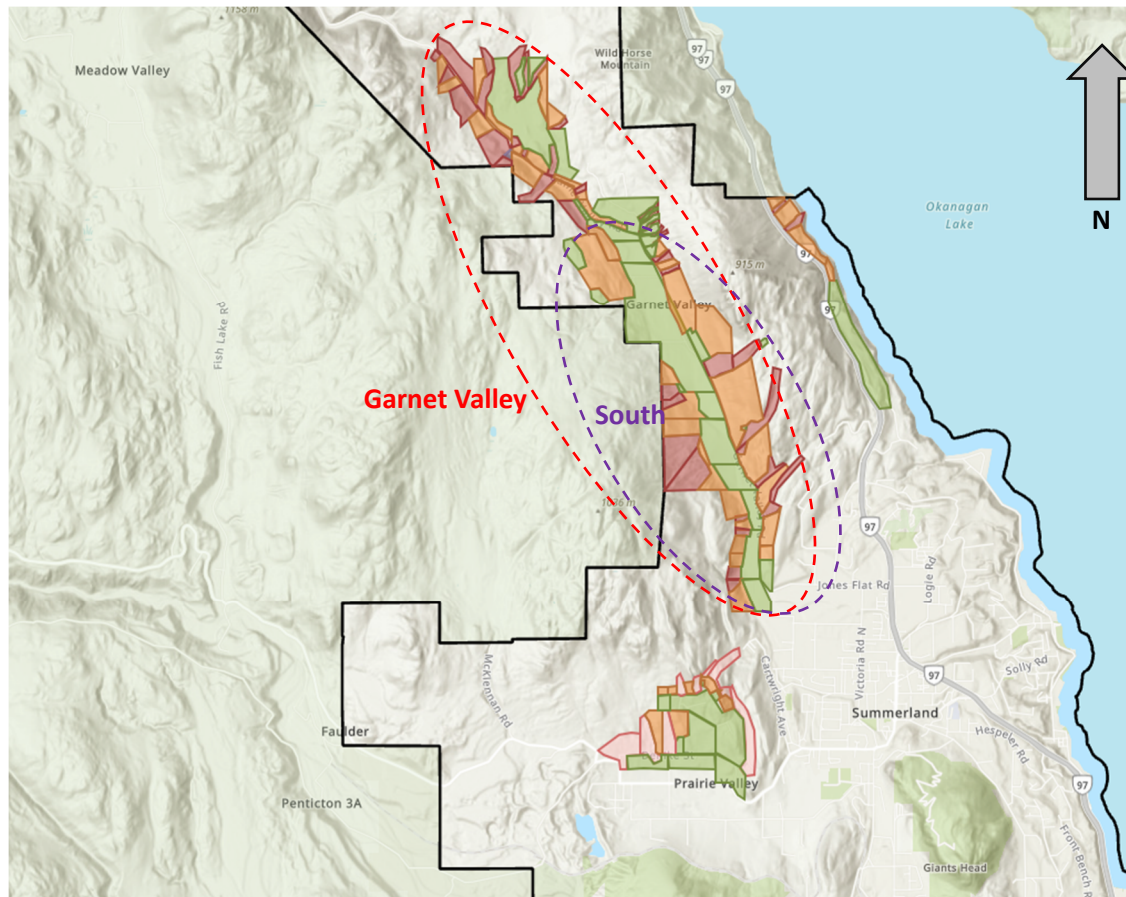


Figure 1 - Site Location (from DoS Spatial Viewer)

Scope of Work

The following scope of work was discussed on August 16, 2026:

- Site Visit - A senior geotechnical engineer site visit to observe the slope conditions, burn impacted areas, and slopes around potentially impacted homes.
- Develop an initial *Re-entry Criteria* memorandum - Observations from the site visit summarized and hazard criteria applied as needed to the impacted areas for potential evacuations or other measures, as well as potential long-term recommendations.

Site Visit Observations

Brittany Linnett, P.Eng. completed a site reconnaissance of the Garnet Valley neighbourhood on August 18 and 19, 2026. This memo summarizes Garnet Valley south of Wildhorse Rd. Wildhorse Rd and Garnet Valley North will be included in a separate memo.

The following observations were noted (Note – Photos are included in Appendix A attached):

- The base of the valley on the west side of Garnet Valley Rd is generally flat to gently sloping. Where Eneas Creek, homes and buildings are away from the base of the west slope they are generally not expected to be impacted by post-wildfire slope stability and debris flow/debris floods (Figures 2 - 5) (Photos 1-2).
- Homes and buildings on the west side of Garnet Valley Rd which are close to the base of the slope and/or situated within the potential runout zones of burnt gullies are at risk of potential post wildfire impacts (Photo 3-5). Buildings in red potential runout zones (Figures 2-5) include but may not be limited to:
 - 16218 Garnet Valley Rd
 - 17304 Garnet Valley Rd
 - 17808 Garnet Valley Rd
 - 17812 Garnet Valley Rd
 - 19006 Garnet Valley Rd
- Buildings in orange potential slope hazard zones (Figures 2-5) include but may not be limited to:
 - 17010 Garnet Valley Rd
 - 17418 Garnet Valley Rd
 - 17402 Garnet Valley Rd
 - 19802 Garnet Valley Rd (shop or garage)
 - 20412 Garnet Valley Rd
 - 20616 Garnet Valley Rd (secondary dwelling or shop)
 - 20618 Garnet Valley Rd (shop or garage)
 - 23618 Garnet Valley Rd (barn or shop)
 - 24014 Garnet Valley Rd (secondary dwelling or shop)
 - 24438 Garnet Valley Rd (trailer)
- Additionally, there are failed and failing retaining walls on 16218 Garnet Valley Rd which should be cordoned off until removed and re-sloped or rebuilt (Photo 6)
- The southern properties on the east side of Garnet Valley Rd did not experience significant fire activity (Photo 7). This includes 16010, 16403, 16801 and 16805 Garnet Valley Rd.



- Most homes on the east side of Garnet Valley Rd are on or close to steeper slopes and fall within the orange slope hazard zone (Photo 8) though some have sufficient flat area upslope of the dwellings to mitigate potential risk (Figures 2-5).
- Some homes and/or driveways on the east side of Garnet Valley Rd are within or potentially impacted by burnt gullies (Photo 9). Properties in red zones (Figures 3-5) include:
 - 19395 Garnet Valley Rd (driveway)
 - 19399 Garnet Valley Rd (driveway and garage)
 - 21207 Garnet Valley Rd
 - 21603 Garnet Valley Rd
 - 23827 Garnet Valley Rd (driveway and shed)
 - 24023 Garnet Valley Rd
- In other locations along Garnet Valley Rd burnt gullies may cause impacts to the road and properties in future, however no buildings are in the direct runout path (Photo 10)
- A gabion basket retaining wall below the Fortis BC gas main on 21207 Garnet Valley Rd was noted to have sustained some damage (Photo 11) and should be fully inspected and assessed for stability.
- On 19399 Garnet Valley Rd, two potentially unstable boulders were noted on the upper slopes. Post wildfire rain events may have an increased risk of destabilizing the soil around the boulders. The house is not in the direct runout path due to the overall topography, however, initial observation indicate that the boulders have the potential to reach Garnet Valley Rd and/or properties on the west side. (Photo 12).

Recommendations

In the meeting with DoS, rainfall triggers for post wildfire debris flows and slope instability were discussed. Generally, post wildfire slopes are vulnerable to debris flows and/or landslide hazards during high intensity and/or prolonged rainfall events.

Statlu Environmental Consulting developed rainfall trigger guidelines which are detailed in the report “*Wet Weather Shutdown Criteria*” for the MFLNRORD Southern Engineering Group, dated April 29, 2021. For the purposes of the initial hazard assessment these criteria developed for the southern interior of British Columbia are considered to be applicable.

Table 1 details rainfall intensity and total shutdown criteria for different zones. In the case of wildfire experienced within the last 3 years the “Identified Unstable Conditions” triggers are recommended.

Table 1 - Proposed Shutdown Criteria (from Stalu, 2021)

Zone	Zone (annual precipitation)	Time Period			
		One hour	12 hour	24 hour	48 hour
1	Very wet (1,500 mm to 3,000 mm)	N/A	28 mm	35 mm	60 mm
2	Wet (1,100 mm to 1,500 mm)	N/A	25 mm	30 mm	50 mm
3	Average (600 mm to 1,100 mm)	10 mm	22 mm	25 mm	40 mm
4	Dry (100 mm to 600 mm)	8 mm	18 mm	20 mm	30 mm
5	Identified Unstable Conditions	6 mm	10 mm	15 mm	20 mm

For the purposes of the initial assessment and re-entry criteria development it is Terrane's recommendation that homes immediately downhill of fire impacted slopes, or downslope of fire impacted drainages, are evacuated if the Zone 5 precipitation criteria are met (Table 1). Impacted properties in the Garnet Valley neighbourhood are shown in Figures 2, 3, and 4, below. Red areas have a higher risk of long term impacts due to slope height and or/grade, runoff channels, or known historic drainages.

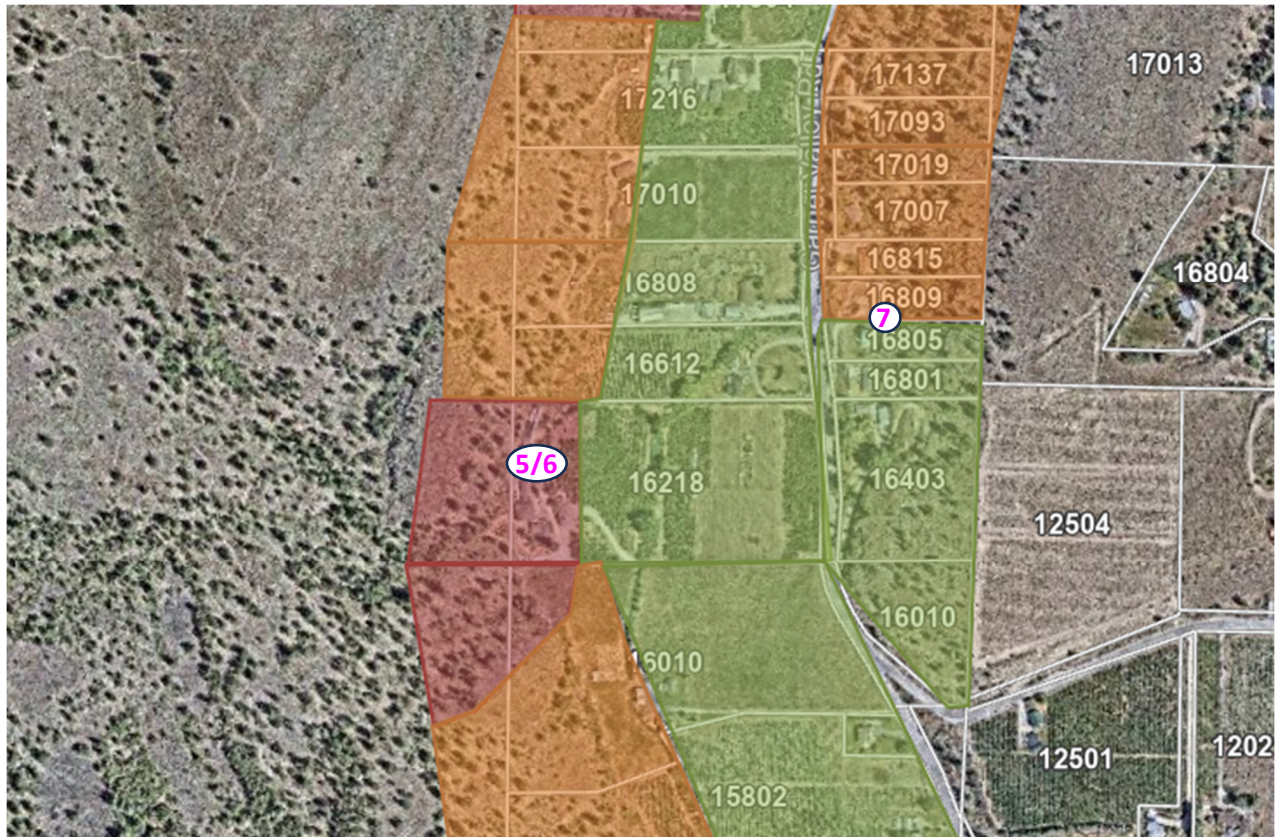


Figure 2 – Garnet Valley Properties Potentially Impacted by Post-Wildfire Slope Hazards (Red and Orange). Properties not considered at increased risk from slope hazards (Green). Approximate Photo locations in pink. Imagery from DoS Spatial Viewer August 20, 2026.

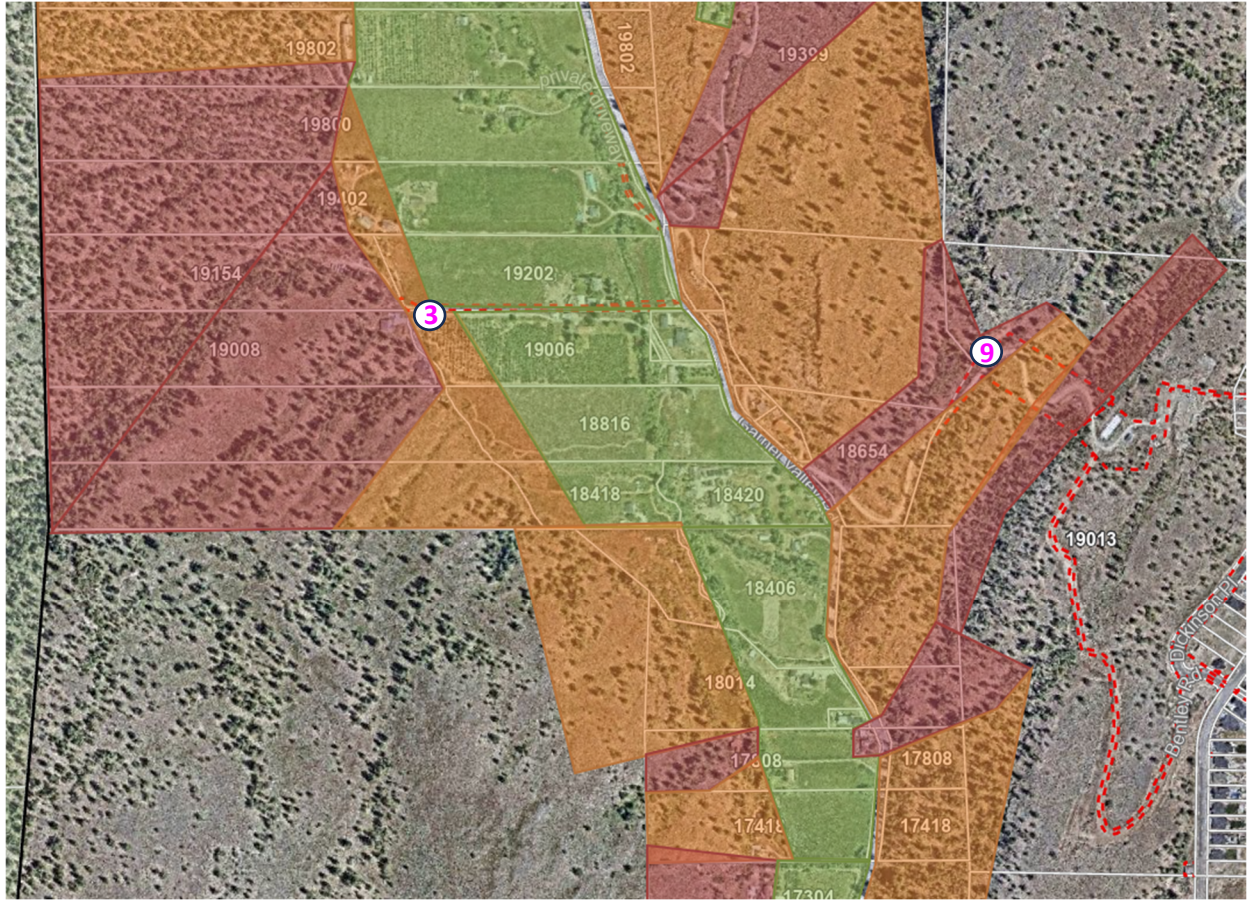


Figure 3 – Garnet Valley Properties Potentially Impacted by Post-Wildfire Slope Hazards (Red and Orange). Properties not considered at increased risk from slope hazards (green). Approximate Photo locations in pink. Imagery from DoS Spatial Viewer August 20, 2026.

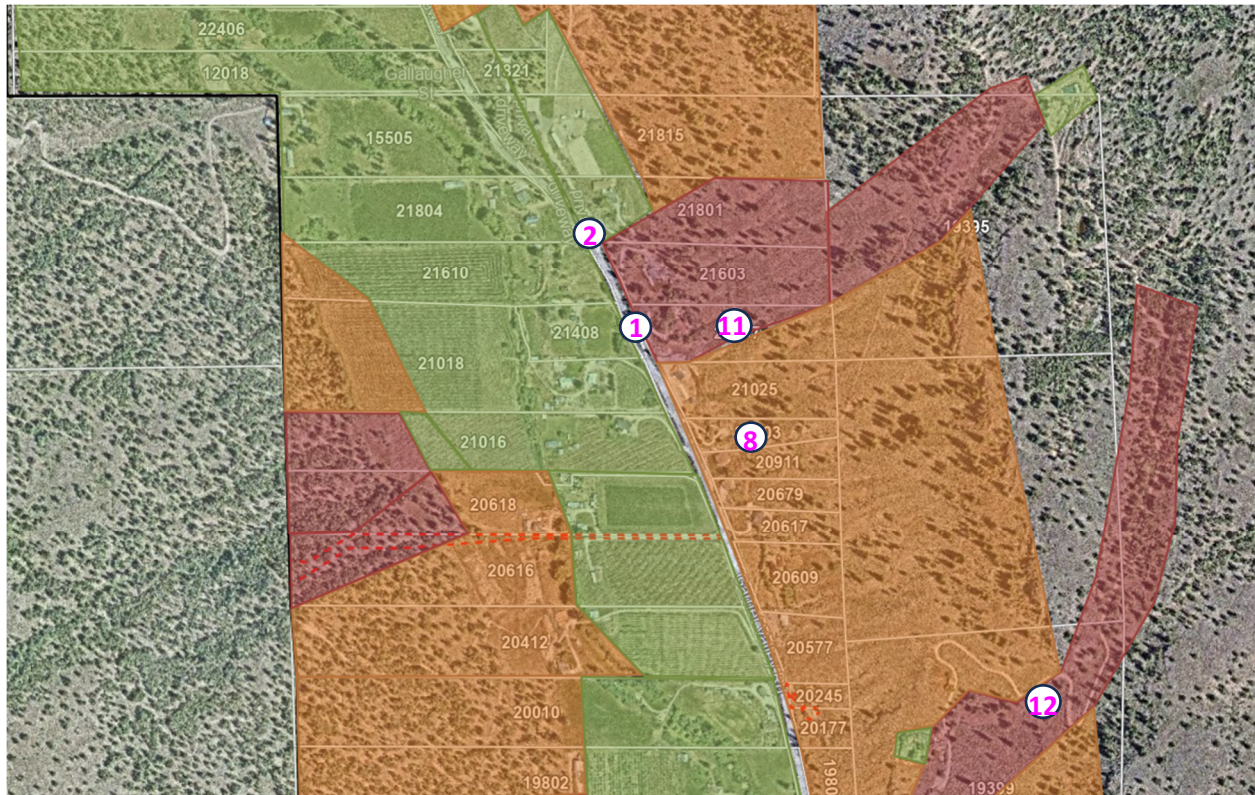


Figure 4 – Garnet Valley Properties Potentially Impacted by Post-Wildfire Slope Hazards (Red and Orange). Properties not considered at increased risk from slope hazards (Green). Approximate Photo locations in pink. Imagery from DoS Spatial Viewer August 20, 2026.

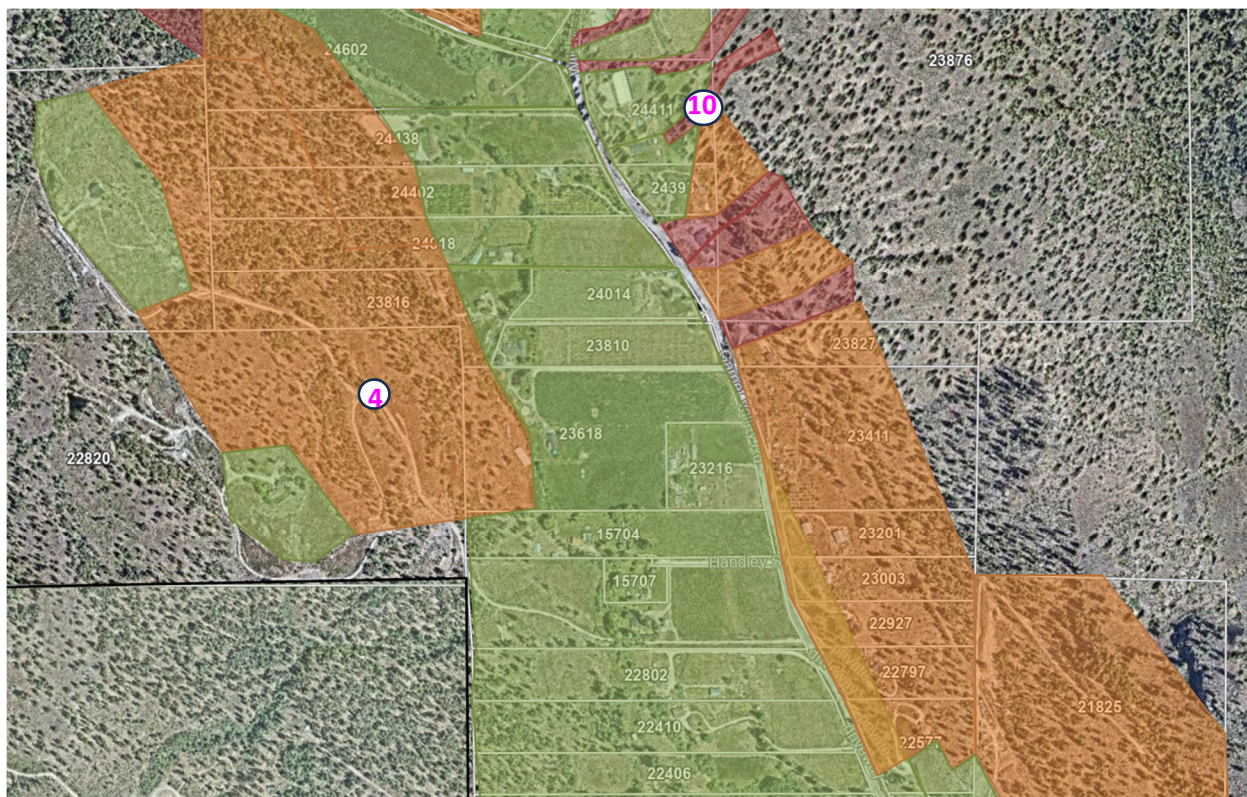


Figure 5 – Garnet Valley Properties Potentially Impacted by Post-Wildfire Slope Hazards (Red and Orange). Properties not considered at increased risk from slope hazards (Green). Approximate Photo locations in pink. Imagery from DoS Spatial Viewer August 20, 2026.

The following recommendations apply to the rainfall and evacuation criteria:

- Impacted properties should remain evacuated until 24 hours after the end of the rain event for 1 hour, 12 hour, and 24 hour criteria, or 48 hours after the end of the rainfall event if the 48 hour criteria is exceeded (see Table 1), or after an assessment by a qualified professional engineer.
- A rainfall gauge with remote monitoring and alarm capabilities should be placed within 2.5 km and 150 m of elevation of the impacted areas. If remote monitoring is not available, then the gauge should be checked hourly during significant rainfall. Snowmelt is not included in the criteria detailed in this memo.

In addition to measures resulting from the exceedance of rainfall criteria, the public and DoS should remain aware of other indicators of geotechnical instability. These can include but are not limited to:

- Pulses of sediment-laden (turbid) water in streams, especially in gullies,
- Streams suddenly drying up when conditions are otherwise wet,
- Constant small rock falls,
- Cutslope slumps that block ditches and/or roads,
- Tension cracks appearing in road fills or slopes,

- Recent avalanches, landslides, or debris flows or their deposits observed that were not present during the previous day; and,
- Diverted streams with flow appearing in new stream courses that were previously dry.

If any of these indicators of instability are observed, potentially impacted properties should be evacuated until a qualified professional engineer has assessed the site.

Properties not highlighted were not included in the site reconnaissance at the time of this memo. Potentially dangerous tree assessment, fire hazard, and other non-geotechnical hazard assessments are not included within the scope of this memo.

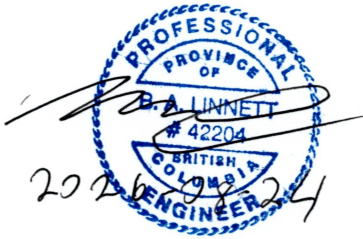
Long term slope stability and potential debris flow/debris flood hazards should be assessed by a Qualified Geotechnical Engineer prior to removal of the rainfall evacuation criteria noted above. Terrane would be happy to provide these services if requested.

Closure

Please contact us with any questions, comments or concerns.

Regards,

Terrane Geoscience Inc.



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Appendices

Appendix A Photo Log



Photo 1. Looking west at the west side of Garnet Valley Rd.



Photo 2. Looking west from Garnet Valley Rd.

Client:

District of Summerland

Project:

Garnet Valley South Preliminary Slope
Hazard Assessment



YY/MM/DD 2026-08-21

Prepared BL

Design

Reviewed TLG

Approved

Title:

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Photo 3. Burned gully with previous building immediately at the base.



Photo 4. Heavily burned slope downslope of 22820 Garnet Valley Rd looking northeast.

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Photo 5. Burned gully immediately upslope of remaining house on 16218 Garnet Valley Rd.



Photo 6. Failed retaining wall on 16218 Garnet Valley Rd.

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Photo 7. Slope above homes on the east side of Garnet Valley Rd, south end, looking southeast.



Photo 8. Burnt slopes above homes on the east side of Garnet Valley Rd, looking south.

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Photo 9. Gully upslope (west) of Garnet Valley Rd, looking southwest.



Photo 10. Gully upslope (west) of Garnet Valley Rd, looking northeast.

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Photo 11. Damaged gabion wall upslope of 21207 Garnet Valley Rd looking north.



Photo 12. Boulder on 19399 Garnet Valley Rd looking northwest.

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