GEOTECHNICAL ASSESSMENT
Residential Development
9000 Block, Highway 99, Whistler, BC

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APPENDICES

1.0 INTRODUCTION

As requested, Kontur Geotechnical Consultants Inc. (Kontur) has completed a revised geotechnical assessment of the proposed 9000 Block Highway 99 development, Whistler (Squamish-Lillooet Regional District), BC. The purpose of the assessment was to provide a characterization and location of observed naturally occurring potential geologic hazards, opinions as to the nature of the hazards and possible consequences and influence areas of the identified potential hazards. Kontur's assessment of potential naturally occurring geologic hazard events follow generally accepted guidelines provided by the Engineers and Geoscientists of British Columbia (EGBC) "Professional Practice Guidelines Landslide Assessments in British Columbia", version 4.1 dated March 2023.

As the Squamish Lillooet Regional District (SLRD) does not provide a level of geologic hazard acceptability, Kontur has referenced the British Columbia Ministry of Transportation and Transit (MOTT) guidance for acceptability of geologic hazard occurrence. The MOTT guidelines are:

- 1 in 475 years for damaging events related to landslides;
- 1 in 200 years for damaging events related to flooding;
- 1 in 300 years for damaging events related to snow avalanches;
- 1 in 10,000 years for life threatening events.

The lack of comprehensive historical records spanning the time periods noted in the MOTI guidelines with respect to natural occurring geologic hazards within or adjacent to the subject property limits the ability of Kontur to complete a quantitative assessment of specifically identified hazards. Therefore, Kontur is providing a qualitative assessment based on Kontur's experience and interpretations of existing site conditions. It should be noted that MOTT does not provide acceptability limits for hazard risk associated with residential development and the approving authority (SLRD) must determine risk acceptability for development approval.

Specifically, this assessment focused on the following naturally occurring geologic hazard events:

- Slope instabilities;
- Rockfall;
- Snow avalanche;
- Debris flows/ torrents;
- Flooding.

Attached to this report are a Site Plan, Test Pit Location Plan, Site Photos and an Appendix D from the "*Professional Practice Guidelines Landslide Assessments in British Columbia*".

2.0 SOURCES OF INFORMATION

This geotechnical assessment is based on the following information:

- Historic aerial photographs extending over the previous 70 years, specifically aerial photographs for the years 1946, 1958, 1969, 1975, 1981, 1989, 1994, 2005 and 2016, were reviewed;
- Subdivision Plan provided by Vis-Eng Engineering;

- Geotechnical exploration program consisting of four (4) test pits excavated to depths of up to about 2.4m;
- Previous experience by Kontur personnel in the vicinity of the proposed development during development of Phases 1 through 6;
- Lidar topographic information provided by Creus Engineering; and,
- Site reconnaissance by senior Kontur personnel during August 2025 to observe, record and photograph features of geotechnical significance.

3.0 UNDERSTANDING OF PROJECT

The subject property consists of 9000 Block Highway 99, Whistler with the legal description District Lot 2247, Group 1, New Westminster District Except: Firstly: Part in Plan VA23216 and Secondly: Part in Plan BCP39086.

Based on a review of the provided Site Plan, the proposed development generally consists of the construction six (6) duplex residential buildings resulting in a total of twelve (12) residential units. Access to the proposed subdivision is via a proposed entrance on the west side of Highway 99 immediately opposite of the entrance to Wedge Woods subdivision connecting to a proposed internal access road with a total cumulative length of about 220m.

4.0 SITE DESCRIPTION

4.1 General

The subject property is located on the west side of Highway 99 about 9.5km northeast of the Village of Whistler. The subject property is irregular in shape with the northern and western boundaries being linear with a north-south and east-west orientation respectively and the eastern boundary being defined by Highway 99. The property has an east-west dimension ranging from about 330m at the southern boundary to about 1200m along the northern boundary and a north south dimension of about 16000m along the western boundary. The property is bounded by Highway 99 to the east and undeveloped land to the north, south and west. A BC Hydro right-of-way about 60m wide transects the property, subparallel to Highway 99 and ranging in distance from the west side of Highway 99 from about 12m at the south end to about 70m at the north end. The proposed development is to be located in the northeast corner of the property, between the BC Hydro right-of-way and Highway 99. The proposed development is generally rectangular in shape with a north -south dimension of about 235m and an east-west dimension of about 70m at the northern boundary and about 40m at the south end.

Topography within the proposed development generally consisted of a gently inclined east-facing slope with inclinations ranging from flat lying on the southern portion of the property to about 8.5H: 1V (Horizontal: Vertical) in the northern portion. A small gully about 10m wide and 2m deep, with an east west orientation was noted in the central portion of the proposed development. The gully was vegetated, and no water was noted at the time of site reconnaissance. The gully terminated at a culvert crossing Highway 99, with a rock stack wall about 3.5m in height retaining soils up slope of the culvert (see Photo 11).

West of the southern portion (see Profile A-A) of the proposed subdivision, the east facing slope steepens to about 6H: 1V for a horizontal distance of about 110m then transitioning to a 1.8H: 1V inclined slope for

a horizontal distance of about 30m. Topography in this area then becomes a west facing slope, with a total height of about 10m, and an overall inclination of about 2H: 1V; however, based on the site reconnaissance, the upper about 5m of the slope was near vertical.

West of the central portion of the proposed subdivision (see Profile B-B), the east facing slope steepens to an inclination of about 5H: 1V over a horizontal distance of about 140m then transitioning to an inclination of about 2H: 1V for a horizontal distance of about 20m. Topography then flattens for a distance of about 40m transitioning to a west facing slope inclined at about 2H: 1V for a distance of about 30m.

West of the northern portion of the proposed subdivision (see Profile C-C), the east facing slope steepens to an inclination of about 1.7H: 1V for a horizontal distance of about 15m then transitioning to a level surface for a distance of about 60m. West of the flat lying area there is a steep west facing slope inclined at about 1.3H: 1V for a distance of about 15m. Site reconnaissance of the west facing slope indicates it is generally comprised of very steep to near vertical bedrock bluffs about 10m in height.

West of the topography described above the east facing slopes transition to gently inclined slopes with inclinations ranging from flat lying to about 10H: 1V over horizontal distances from about 10m to 80m. The gentle slopes increase in steepness to the west from about 3H:1V to about 1.3H:1V to the top of a ridge on the south side of Cougar Mountain at an elevation of about 1200m.

4.2 Geotechnical Site Reconnaissance

On August 22, 2025, a geotechnical site reconnaissance was completed within the area of the subject property and areas extending about 900m west of the subject property. Waypoints representing the location of features of geotechnical significance were recorded. A total of twenty (20) waypoints were identified, as described in detail in the Appendix B. The approximate location of the waypoints is displayed in the *Appendix C and waypoint photographs are displayed in Appendix D.*

In general, key features identified upslope (west) of the subject property during site reconnaissance included boulder fields, steep bedrock bluffs, potential rockfall source bluffs, and varying areas of vegetation. It should be noted that the nearest blocks beyond the toe of the boulder fields was in the order of about 350m west of the subject property (refer Waypoint 15).

Steep bedrock bluffs, generally west facing and in the order of about 5m height, were noted within close proximity to the western property line (refer Waypoint 16 and 18). These bedrock bluffs typically formed a north-south alignment, with some localized areas in the order of about 15 to 20m height.

3.1 Surficial and Subsurface Soil Conditions

Based on a review of surficial geology plan Open File 5324, “Surficial Geology and Landslide Inventory of the Upper Seat to Sky Corridor” obtained from the Geologic Survey of Canada the subject property is underlain by bedrock. The surficial geology plan also indicates the deposit of rock avalanche debris about 230m northwest of the proposed development site. The avalanche debris field consisted of large angular rock at surface.

A geotechnical exploration program consisting of four (4) test pits excavated to depths of up to about 2.4m. The test pit program was located, supervised, logged and sampled by Kontur personnel with samples returned to Kontur laboratory for further visual classification. The table below provides a

summary of subsurface soils encountered in the test pits. The attached Site Plan shows approximate locations of the test pits.

Test Pit Identifier	Depth Below Surface	Soil Description
TP 19-01	0.0 to 0.1m	Topsoil
	0.1 to 0.8m	SAND with some silt and trace gravel, brown, moist, (Very Dense)
	0.8m	Bedrock
TP19-02	0.0 to 0.1	Topsoil
	0.1 to 0.8m	SAND with some silt and trace gravel, grey, moist (Very Dense)
	0.8 to 1.2m (refusal)	SAND with trace silt, some gravel and cobbles to about 100mm dia. (rounded), moist, (Very Dense)
TP19-03	0.0 to 0.1m	Topsoil
	0.1 to 0.8m	SAND with some silt trace gravel, brown, moist (Dense)
	0.8 to 2.4m	SAND (fine), grey, moist (compact)
TP 19-04	0.0 to 0.1	Topsoil
	0.1 to 0.6m	SAND with some gravel tract to some silt, brown, dry, (Dense)
	0.6 to 2.1m	SAND, grey, dry (Compact)

Localized bedrock outcrops were noted within the proposed development in several locations. West of the proposed subdivision bedrock outcrops become more common and dominate the ground surface.

3.2 Air Photo Review

A review of historical aerial photographs ranging from 1946 through 2016 were reviewed. No significant indications of slope instabilities were noted within the area of the proposed subdivision. However, the rock avalanche debris deposits indicated on the surficial geology plan were clearly identifiable in all aerial photographs. The source of the rock avalanche appeared to be a lineation that extends from the north

side of the rock avalanche to about 370m south of the source area and is shown on the Historic Slide and Lineation (Figure 3). Some talus slopes were noted above the lineation in the source area for the rock avalanche with the sources for the talus deposits appearing to be shear zones in the slope above the lineation.

The historic rock avalanche source has an average elevation of about 930m and a horizontal runout from the source of about 820m. The width of the source area was about 730m. The toe of the deposit was at an elevation of about 600m.

The south end of the lineation extends about 350m to the south of the existing rock avalanche deposit. of the rock avalanche is about 850m horizontal distance from the western boundary of the proposed subdivision with an elevation of about 900m. The elevation of the proposed subdivision is about 600m. The backslope behind the lineation is at a similar inclination and in line with the slope below the lineation.

The slope inclination of the historic rock avalanche area, and areas immediately adjacent, are a relatively consistent and about 2H:1V. The slopes above the proposed subdivision range in inclination from relatively flat lying to about 3H: 1V with upslope (west) facing bluffs and slopes.

3.3 Groundwater Conditions

No groundwater seepage was noted with the proposed development area nor were any significant surface water runoff.

4.0 COMMENTS AND RECOMMENDATIONS

4.1 General

The proposed development area is located within an area of gently inclined bedrock-controlled slopes. Bedrock is either exposed or covered with a layer of dense to very dense native granular soils. It is considered that the bedrock or overlying granular soils are generally suitable for construction of residential buildings with adequate bearing capacity and settlements within typical tolerances for such buildings.

The presence of a historic rock avalanche north of the proposed development site was noted and the lineation which appears to be the source of the rock avalanche is discussed below.

The sections below provide comments and recommendations with regards to potential naturally occurring geologic hazards within and adjacent to the subject area that could influence the development.

4.2 Geologic Hazards

As previously discussed, the subject property is located in mountainous terrain; therefore, the potential for such naturally occurring events as snow avalanche, rockfall and slope stability to influence the proposed development should be considered.

Based on observations and interpretations during site reconnaissance and historical aerial photograph review, Kontur has developed a geotechnical characterization of the subject property, mountain slopes and drainage basins within and adjacent to the proposed development. This characterization forms the

basis from which Kontur's opinions are provided regarding the likelihood of naturally occurring geologic events influencing the proposed development.

4.2.1 Slope Stability

The historic rock avalanche north of the proposed development source area appears to be a lineation noted in aerial photographs. The rock avalanche has an average source elevation difference from toe of deposit to source of about 330m (geodetic) and the toe of the deposit was about 820m horizontal from the source for a runout angle of about 22° from the source. This runout distance is greater than a typical rock avalanche runout, which are typically determined with a 25° projection from the top of the slide zone.

The proposed subdivision is located about 850m horizontal distance from the lineation with an elevation difference of about 300m. The angle from the western property boundary to the lineation was about 19°, well below typical runout distances and below the historic rock avalanche to the north. Based on the above discussion, a rock avalanche originating from the lineation with a runout similar to the historical rock avalanche would have a horizontal runout distance of about 720m, about 130m west of the proposed subdivision. The topography between the toe of the historical deposit and the source is relatively uniform 2H: 1V, whereas the topography between the lineation and the proposed subdivision contains significant flat lying areas and west facing (upslope facing) slopes from 7m to 20m in height further reducing the runout distance.

Above the proposed development, it was noted that the slope behind (west) of the lineation was inclined similarly to the slope below (east) of the lineation. A localized area of potential volume bedrock slope failure areas was noted above the proposed development (Waypoint 7). A bench was noted in the area of the lineation within the historic rock avalanche area ending at the southern edge of the source area. This bench is considered to be the northern edge of an earlier rock avalanche within the area above the proposed development, possibly prior to or during the previous glaciation as there was no significant indication of debris below. This opinion is further reinforced by noting the lower slope below the lineation has a very similar inclination as the backslope above and to the rock avalanche source area to the north. In addition, the upper slope above the lineation is in line with lower slope, providing limited source material for a rock avalanche.

Kinematic Assessment Analysis of bedrock structure doe does not indicate that planar sliding, wedge sliding, flexural toppling or Direct Toppling are likely. It should be noted that local structure may present such failures, but they are not globally likely.

The localized potential failure area (Waypoint 7) was about 19°. Based on the above discussion the hazard presented to the proposed subdivision is considered to be very low. A return period of greater than 1:10,000 years has been chosen as no rock avalanche has occurred since the last glaciation.

4.2.2 Rockfall

Rockfall sources include the mountain slopes to the west of the proposed development. The closet bedrock bluff which could be a source for rockfall was located about 300m west of the proposed development (Waypoints 1 and 2). The nearest rockfall deposits of rockfall were about 175m west of the proposed development (Waypoint 20). The presence of the west facing bedrock bluffs (Waypoint 18) were considered to form a barrier for rockfall originating to the west and no sourced were noted east of

the west facing bluffs. As such, no source areas for rock fall hazard to influence the proposed subdivision were noted during site reconnaissance or aerial photograph reviews; hence, the hazard presented by rock fall is considered to be very low. Due to the very low rockfall hazard and lack of accurate topography (Lidar does not extend up the mountain slope) rockfall runout modelling was not conducted.

4.2.3 Snow Avalanche

In general, snow avalanche paths can be identified by vegetation consisting of deciduous trees such as aspen or cottonwoods, grouped together and separated from the surrounding coniferous trees. No area fitting this description were noted during site reconnaissance or aerial photograph review. The probability of snow avalanches influencing the property is considered to be very low.

4.3 Climate Change Considerations

It is considered likely that more frequent and intense storms events are experienced which in the case of bedrock may lead to greater buildup of hydrostatic pressure and more frequent freeze thaw cycles. Such event may loosen rock on the slope surface and result in more frequent rockfall.

5.0 QUANTITATIVE RISK ANALYSIS

A Quantitative Risk Analysis for each residence was conducted.

The subject property is located in an area where nearby rock avalanches have occurred. As such, the "*Professional Practice Guidelines Landslide Assessments in British Columbia"* requires submission of a Quantitative Risk Assessment by a Qualified Professional. The Quantitative Threshold chosen was that used by Squamish and indicates that for the proposed development a threshold of individual loss of life per annum of 1:100,000 (Squamish for new developments) was chosen.

Individual risk, also known as annual Probability of Death of an Individual (PDI), is calculated as follows:

$$PDI_j = \sum_{i=1}^{n} P(H)_i P(S:H)_{i,j} P(T:S)_{i,j} V_{i,j} \qquad \text{Equation 2-1}$$

Where:

- PDI_j is the PDI at a given parcel (j)
- $P(H)_i$ is the annual probability of a geohazard scenario[1] (i)
- $P(S:H)_{i,j}$ is the spatial probability of impact of geohazard scenario (i) at a given parcel (j)
- $P(T:S)_{i,j}$ is the temporal probability of a person occupying a building at parcel (j)
- $V_{i,j}$ is the probability of fatality (vulnerability) given impact by the estimated hazard intensity[2]

The following values for the Landslide Risk have been developed regarding the risk of one fatality:

P(H) = 0.0001 based on 1:10,000 return period;
P(T:S) = 0.9 based on the likelihood of a person being in the building;
V = 0.5 based on likely damage of rock slide that would reach the proposed development;

P(S:H) = 0.1 based on likelihood of the rock avalanche influencing the proposed development.

Hence, PDI = 0.0001 x 0.9 x 0.5 x 0.1 = 4.5x10-6 x N (correlating to a about 1:111,000 probability of death of an individual).

The value of N for an individual residence is considered to be two (2).

As such, the annual probability of death of an individual (individual risk to loss of life per annum) because of a rock avalanche event impacting the subject property is not expected to exceed 1:100,000.

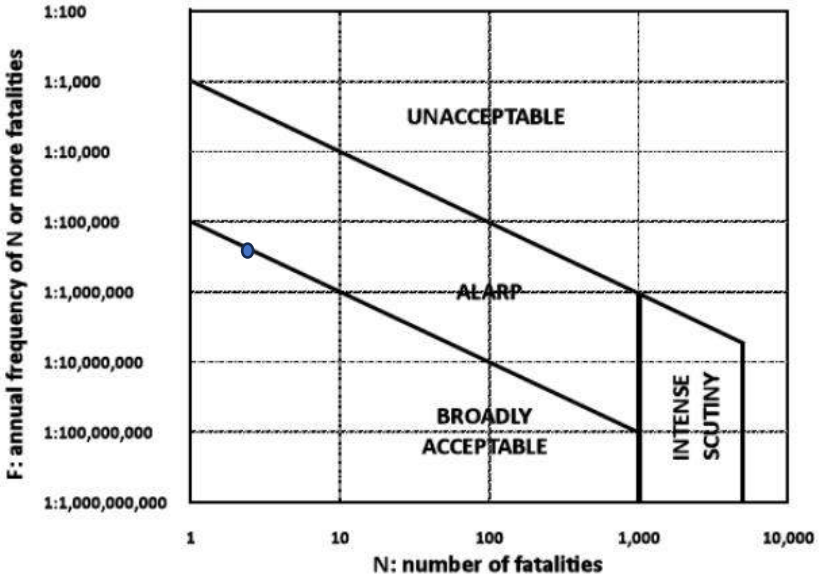


Figure 11-2. Frequency – Number of Fatalities Diagram

Alternatively, the point of 1: 222,000 and N=2 plots within the Broadly Acceptable portion of the F/N Threshold lines for Hong Kong (Number of Fatalities Diagram.

6.0 CLOSURE

The above noted and attached information presents Kontur's understating of the proposed development, interpretations of site conditions and opinions as to the existence of naturally occurring geologic hazards, within and adjacent to the proposed development, and the influence areas of those hazards that could affect the proposed development. The lack of comprehensive historical records with respect to naturally occurring geologic hazards within or adjacent to the proposed development limits the ability of Kontur to complete a quantitative assessment of specifically identified hazards. Therefore, Kontur has provided a qualitative assessment based on Kontur's experience and interpretations of existing site conditions. Some understanding of terminology and associated ranges of annual probability of occurrence connected with this approach is provided in a reference prepared by the Resource Inventory Committee, Government of British Columbia, Slope Stability Task Force (1996) as shown in Table A below.

TABLE A
Relative Terms and Ranges of Annual Probability of Hazard Occurrence
(Resource Inventory Committee, 1996)

Relative Term of Probability	Range of Annual Probability of Occurrence (Pa)	Comments
Very High	>1/20	Indicates the hazard is imminent and well within the lifetime of a person or typical structure. Events occurring with a return interval of 1/20 or less generally have clear and relatively fresh signs of disturbance.
High	1/100 to 1/20	Indicates that the hazard can happen within the approximate lifetime of a person or typical structure. Events are clearly identifiable by deposits and vegetation but may not appear fresh.
Moderate	1/500 to 1/100	Indicates that the hazard, within a given lifetime, is not likely but possible. Signs of previous events, such as vegetation damage may not be easily identified.
Low	1/2500 to 1/500	Indicates the hazard is of uncertain significance.
Very Low	<1/2500	

Provided the recommendations of this report are implemented the property is considered to be safe for the intended use, that being the development of the property for residential purposes. The term “safe” specifically refers to the ability of the subsurface soils to provide adequate bearing to support a building within typical settlement tolerances, global slope stability is adequate, and the subject property is free of hazards with a return period less than that indicated in Section 1.0; however, the approving authority must determine risk acceptability for development approval.

The comments and recommendations presented in this report are based on the referenced information and Kontur’s understanding of the project as described herein. If site conditions or project parameters differ from those described in this report, Kontur should be notified promptly to review geotechnical aspects of the project and provide additional or modified comments and recommendations, as deemed appropriate. Contractors should make their own assessments of subsurface conditions at this site and select the construction means and methods that are most appropriate for encountered site conditions.

This report has been prepared for the exclusive use of the 28165 Yukon Inc., Squamish Lillooet Regional District and/or their designated agents or consultants. Any use of the information contained in this letter for other than its intended purpose or by any other party must first be verified in writing by Kontur. Kontur does not accept any responsibility or damages because of any other party relying on or using the information, interpretations, opinions, comments, and/or recommendations that are contained in this report.

Kontur trusts that the information described above meets your current requirements. If you should have any concerns or questions, please do not hesitate to contact the undersigned.

Sincerely,

Kontur Geotechnical Consultants Inc.

Per:

Evan Sykes, P.Eng.
Principal Geotechnical Engineer

Reviewed by:

Matthew Yip, M.Eng., P.Eng.
Principal Geotechnical Engineer

APPENDIX A
Interpretation and Use of Study and Report Document

INTERPRETATION AND USE OF STUDY AND REPORT DOCUMENT

1.0 STANDARD OF CARE

This study and Report have been prepared in accordance with generally accepted engineering consulting practices in this area. No other warranty, expressed or implied, is made. Engineering studies and reports do not include environmental engineering or consulting.

2.0 COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report which is of a summary nature and is not intended to stand alone without reference to the instructions given to us by the Client, communications between us and the Client, and to any other reports, writings, proposals or documents prepared by us for the Client relative to the specific site described herein, all of which constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. WE CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

3.0 BASIS OF THE REPORT

The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose that were described to us by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document are only valid to the extent that there has been no material alteration to or variation from any of the said descriptions provided to us unless we are specifically requested by the Client to review and revise the Report in light of such alteration or variation.

4.0 USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT OUR WRITTEN CONSENT. WE WILL CONSENT TO ANY REASONABLE REQUEST BY THE CLIENT TO APPROVE THE USE OF THIS REPORT BY OTHER PARTIES AS “APPROVED USERS”. The contents of the Report remain our copyright property and we authorise only the Client and Approved Users to make copies of the Report only in such quantities as are reasonably necessary for the use of the Report by those parties. The Client and Approved Users may not give, lend, sell or otherwise make the Report, or any portion thereof, available to any party without our written permission. Any use which a third party makes of the Report, or any portion of the Report, are the sole responsibility of such third parties. We accept no responsibility for damages suffered by any third party resulting from unauthorised use of the Report.

5.0 INTERPRETATION OF THE REPORT

Nature and Exactness of Descriptions: Classification and identification of soils, rocks, geological units, contaminant materials, building envelopment assessments, and engineering estimates have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors are judgmental in nature and even comprehensive sampling and testing programs, implemented with the appropriate equipment by experienced personnel, may fail to locate some conditions. All investigations, or building envelope descriptions, utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarising such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and all persons making use of such documents or records should be aware of, and accept, this risk. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. Where special concerns exist, or the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.

Reliance on Provided information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to us. We have relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, we cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in the report as a result of misstatements, omissions, misrepresentations or fraudulent acts of persons providing information.

To avoid misunderstandings, KONTUR should be retained to work with the other design professionals to explain relevant engineering findings and to review their plans, drawings, and specifications relative to engineering issues pertaining to consulting services provided by KONTUR. Further, KONTUR should be retained to provide field reviews during the construction, consistent with building codes guidelines and generally accepted practices. Where applicable, the field services recommended for the project are the minimum necessary to ascertain that the Contractor’s work is being carried out in general conformity with KONTUR’s recommendations. Any reduction from the level of services normally recommended will result in KONTUR providing qualified opinions regarding adequacy of the work.

6.0 ALTERNATE REPORT FORMAT

When KONTUR submits both electronic file and hard copies of reports, drawings and other documents and deliverables (KONTUR’s instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by KONTUR shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by KONTUR shall be deemed to be the overall original for the Project.

The Client agrees that both electronic file and hard copy versions of KONTUR’s instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except KONTUR. The Client warrants that KONTUR’s instruments of professional service will be used only and exactly as submitted by KONTUR.

The Client recognizes and agrees that electronic files submitted by KONTUR have been prepared and submitted using specific software and hardware systems. KONTUR makes no representation about the compatibility of these files with the Client’s current or future software and hardware systems.

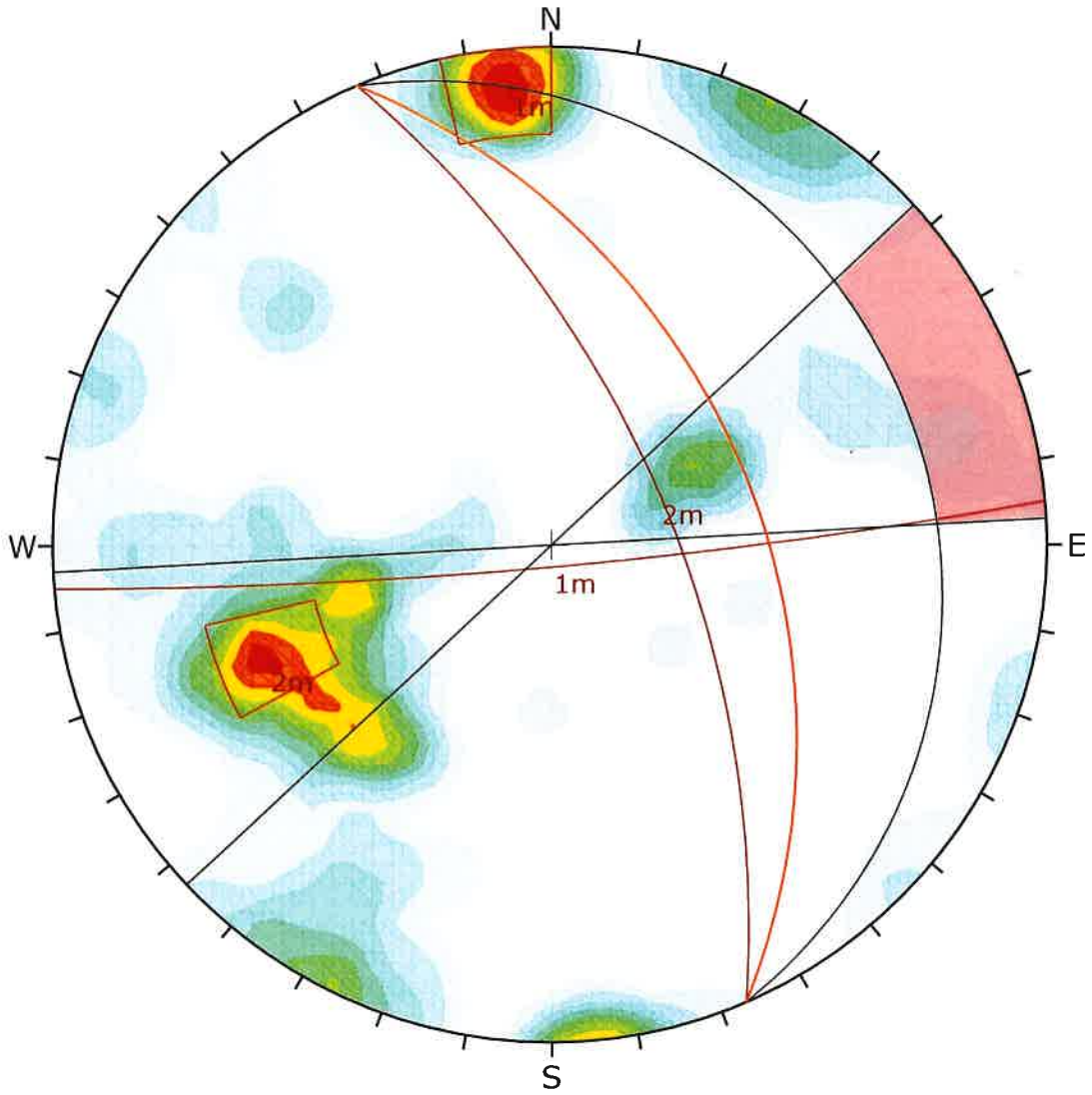
APPENDIX B
Waypoint Summary

Waypoint ID	***Easting (m)***	***Northing (m)***	***Description***
1	*508593*	*5558910*	- *Talus fragments up to 2m but generally less than 1m* - *Rocks appear to be from local source*
2	*508563*	*5558947*	- *Bedrock knolls and bluffs* - *Bluffs are up to 5m height, between bluffs is flat-lying ground*
3	*508468*	*5559037*	- *Boulder field with area covering approximately 30m by 50m.* - *Rock fragments up to 5m.* - *Source appears to be local (bluffs above).* - *Boulders are moss covered.* - *Toe of boulder field is flat then transitions to uphill (west-facing) bluff.* - *Crest of area above the boulder field is flat.*
4	*508373*	*5559080*	- *Scattered boulders up to 2.5m fragment size* - *Vegetation becoming dense with mature trees* - *Bedrock is visible in some areas* - *Source of boulder not clearly identifiable.*
5	*508332*	*5559063*	- *Large boulder about 5m fragment size* - *Appears to be supported by soils* - *800mm diameter tree against upslope side of the boulder* - *Moss covered* - *Source is likely a visible bluff about 150m upslope.*
6	*508311*	*5559023*	- *Boulder field* - *Very large boulders up to 10m fragment size* - *Appears to cover an area of about 50m by 100m* - *No vegetation* - *Source is bedrock bluffs upslope to the west about 100m.*
7	*508227*	*5559011*	- *Bedrock bluffs near vertical up to 25 to 30m height* - *Some overhanging areas with adversely orientated discontinuities* - *Near vertical/overhanging portion appears to extend a length of about 100m* - *Inclination abruptly transitions to slope about 3H:4V (steep bedrock knolls) at the northern end of the near-vertical areas*

8	*508150*	*5559057*	- *Bedrock knolls and some boulders up to 3m fragment size in-between knolls of bedrock* - *Moss covered* - *Some vegetation including brush and trees*
9	*508135*	*5559019*	- *Steep east-facing bedrock bluffs, generally intact* - *Greater than 30m height* - *Occasional boulders near toe of bluff (less than 2m fragments)* - *Formation continues south at least 200m* - *Vegetation below bluff consists of mature trees.*
10	*508111*	*5559058*	- *Boulder field, globally inclined at about 2H:1V with a length of about 50m (downslope to the east) and extending at least 100m north* - *Rock fragments increasing from south to north from about 1.5m to 3m (respectively)* - *Source does not appear obvious* - *Steep, intact bedrock knolls with dense, mature vegetation (trees) are located immediately above the boulder field.*
11	*508182*	*5559160*	- *Steep bedrock bluffs less than 10m height* - *Boulder field about 200m by 30m with rocks typically 1m fragments*
12	*508318*	*5559176*	- *Boulder field. Near edge of larger boulder field* - *Globally inclined between 1.5 to 2H:1V* - *Boulders generally less than 1.5m fragments*
13	*508254*	*5559220*	- *Boulder Field, large boulders up to about 4m fragments* - *Source appears to be south end of main "rock-avalanche" path*
14	*508462*	*5559075*	- *Field of large boulders up to 5m fragment size* - *Seems to extend north* - *Source not visibly obvious*
15	*508536*	*5559180*	- *Boulder fields appear to terminate at this location* - *Occasional large boulders up to about 3m in some areas* - *Boulders generally covered in thick moss.*
16	*508873*	*5558939*	- *Flat-lying bedrock crest* - *Abruptly drops down to the west in a north-south lineation about 4m height inclined at about 1H:3V*

			- *Slowly transitions to a mellow 5H:1V east-facing slope to the east.*
17	*508918*	*5559078*	- *Mellow undulating terrain* - *Globally slopes gently east but has undulations up to 5m high with mellow slopes inclined no steeper than about 4H:1V (likely represents underlying bedrock profile)*
18	*508803*	*5559171*	- *West facing intact rock bluffs* - *20m tall, aligned north-south*
19	*508782*	*5559087*	- *East facing bluffs, globally inclined no steeper than 3H:1V,* - *Bluffs generally inclined no steeper than 1H:1V with maximum 3m height* - *No loose rock fragments.*
20	*508675*	*5559093*	- *Talus at toe of slope covering about 30m by 15m* - *Source appears to be bluffs directly above* - *The toe of the talus forms the north edge of the access road for the existing water tower.*

APPENDIX C
Kinematic Analysis



Color	Density Concentrations
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	0.80 - 1.60
	1.60 - 2.40
	2.40 - 3.20
	3.20 - 4.00
	4.00 - 4.80
	4.80 - 5.60
	5.60 - 6.40
	6.40 - 7.20
	7.20 - 8.00

Contour Data	Pole Vectors
Maximum Density	7.99%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Kinematic Analysis	Flexural Toppling
Slope Dip	45
Slope Dip Direction	67
Friction Angle	30°
Lateral Limits	20°

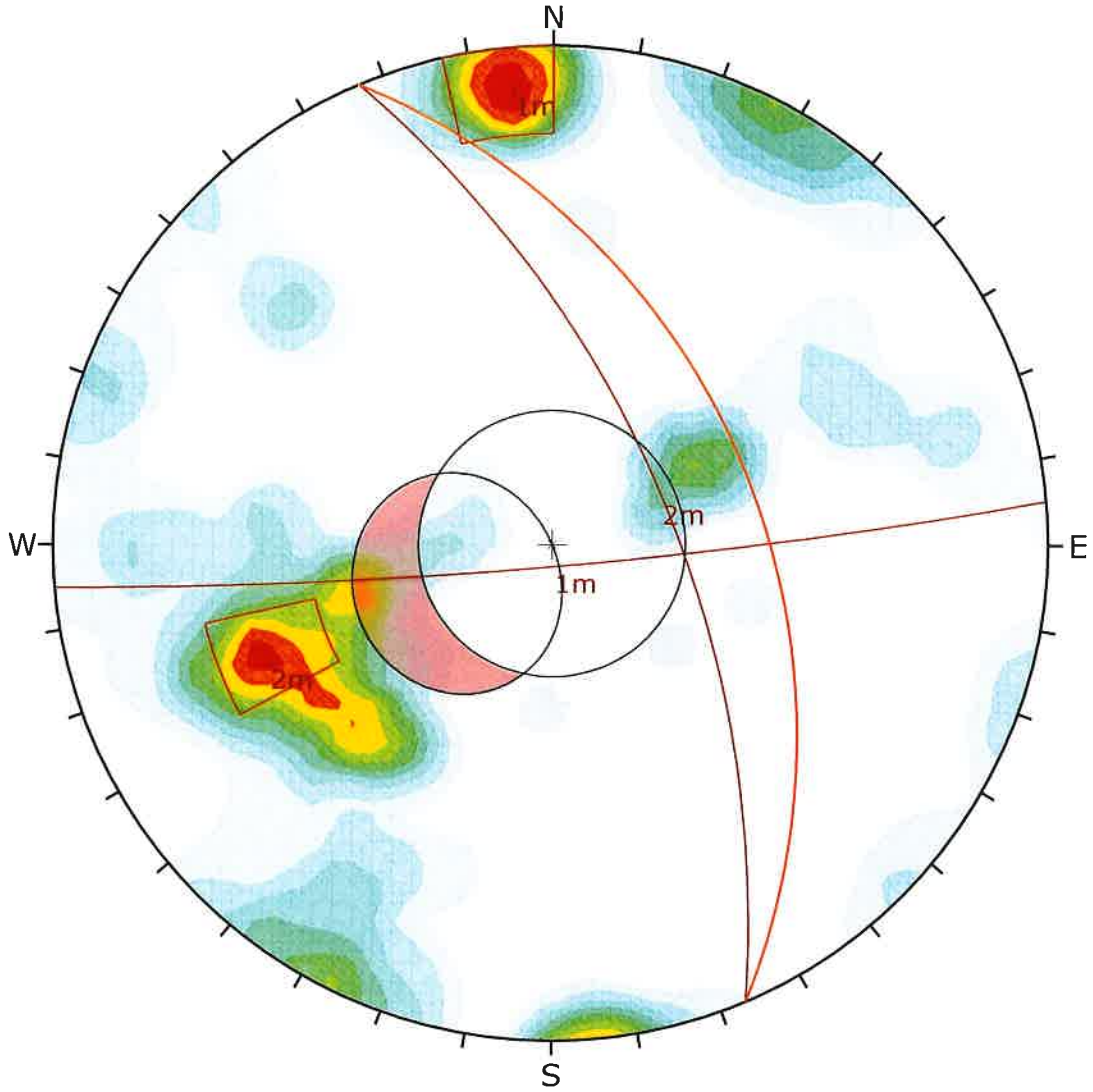
	Critical	Total	%
Flexural Toppling (All)	2	103	1.94%

Plot Mode	Pole Vectors
Vector Count	103 (103 Entries)
Hemisphere	Lower
Projection	Equal Angle

rocscience

DIPS 7.018

Project	K-180335-00 DIPS Analysis		
Analysis Description			
Drawn By	Peter Knott	*Company*	Kontur Geotechnical Consultants Inc.
Date	2025-08-28, 9:03:26 AM	*File Name*	Dips Potential rockfall PAK Aug 28 2025.dips7



Color	Density Concentrations
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	0.80 - 1.60
	1.60 - 2.40
	2.40 - 3.20
	3.20 - 4.00
	4.00 - 4.80
	4.80 - 5.60
	5.60 - 6.40
	6.40 - 7.20
	7.20 - 8.00

Contour Data	Pole Vectors
Maximum Density	7.99%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Kinematic Analysis	Planar Sliding
Slope Dip	45
Slope Dip Direction	67
Friction Angle	30°

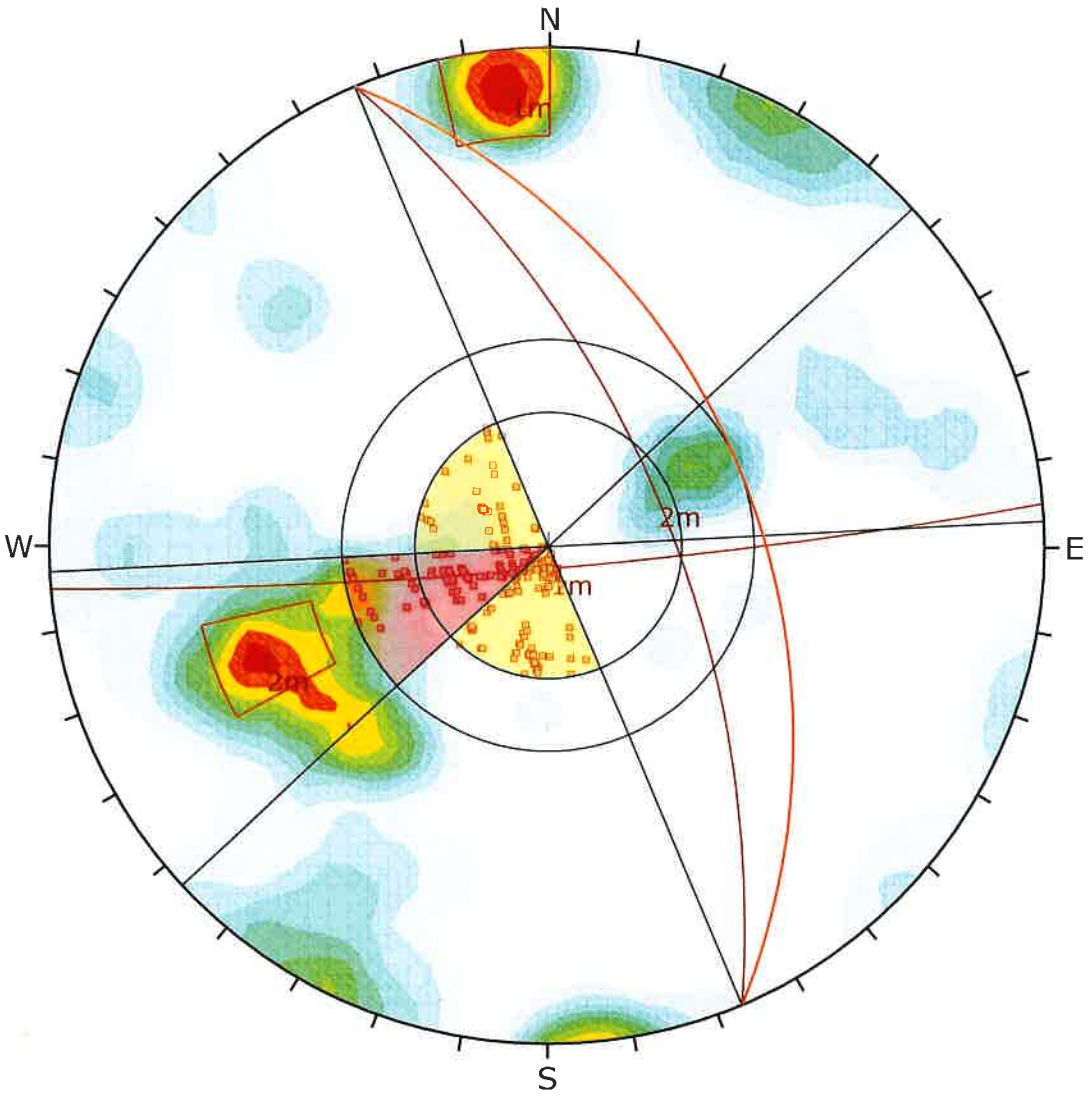
	Critical	Total	%
Planar Sliding (All)	6	103	5.83%

Plot Mode	Pole Vectors
Vector Count	103 (103 Entries)
Hemisphere	Lower
Projection	Equal Angle

rocscience

DIPS 7.018

Project	K-180335-00 DIPS Analysis		
Analysis Description			
Drawn By	Peter Knott	*Company*	Kontur Geotechnical Consultants Inc.
Date	2025-08-28, 9:03:26 AM	*File Name*	Dips Potential rockfall PAK Aug 28 2025.dips7



Symbol	Feature
	Critical Intersection

Color	Density Concentrations
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	0.80 - 1.60
	1.60 - 2.40
	2.40 - 3.20
	3.20 - 4.00
	4.00 - 4.80
	4.80 - 5.60
	5.60 - 6.40
	6.40 - 7.20
	7.20 - 8.00

Contour Data	Pole Vectors
Maximum Density	7.99%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Kinematic Analysis	Direct Toppling
Slope Dip	45
Slope Dip Direction	67
Friction Angle	30°
Lateral Limits	20°

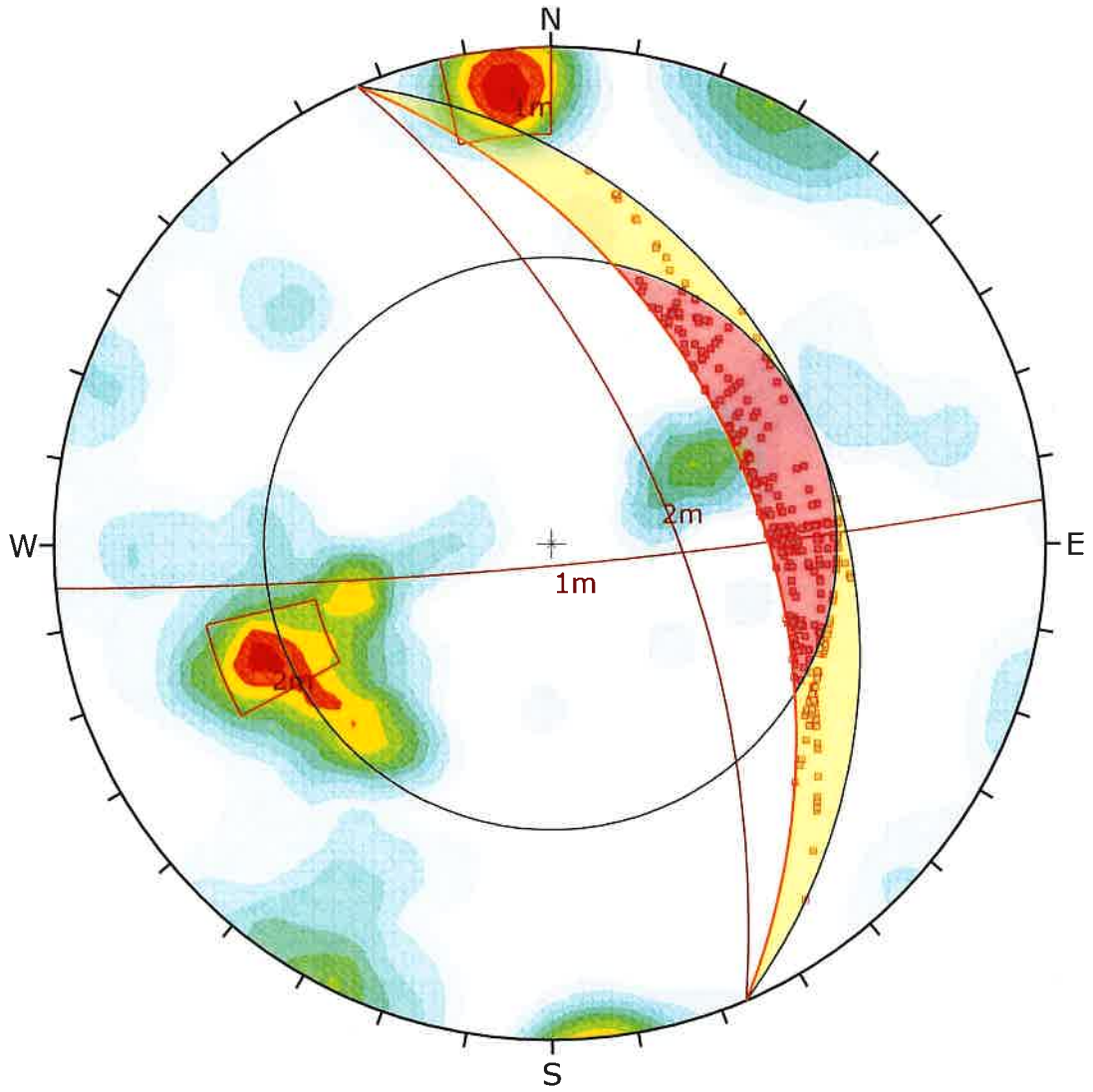
	Critical	Total	%
Direct Toppling (Intersection)	108	5253	2.06%
Oblique Toppling (Intersection)	168	5253	3.20%
Base Plane (All)	13	103	12.62%

Plot Mode	Pole Vectors
Vector Count	103 (103 Entries)
Intersection Mode	Grid Data Planes
Intersections Count	5253
Hemisphere	Lower
Projection	Equal Angle

rocscience

DIPS 7.018

Project	K-180335-00 DIPS Analysis		
Analysis Description			
Drawn By	Peter Knott	*Company*	Kontur Geotechnical Consultants Inc.
Date	2025-08-28, 9:03:26 AM	*File Name*	Dips Potential rockfall PAK Aug 28 2025.dips7



Symbol	Feature
▫	Critical Intersection

Color	Density Concentrations
	0.00 - 0.80
	0.80 - 1.60
	1.60 - 2.40
	2.40 - 3.20
	3.20 - 4.00
	4.00 - 4.80
	4.80 - 5.60
	5.60 - 6.40
	6.40 - 7.20
	7.20 - 8.00

Contour Data	Pole Vectors
Maximum Density	7.99%
Contour Distribution	Fisher
Counting Circle Size	1.0%

Kinematic Analysis	Wedge Sliding
Slope Dip	45
Slope Dip Direction	67
Friction Angle	30°

	Critical	Total	%
Wedge Sliding	353	5253	6.72%

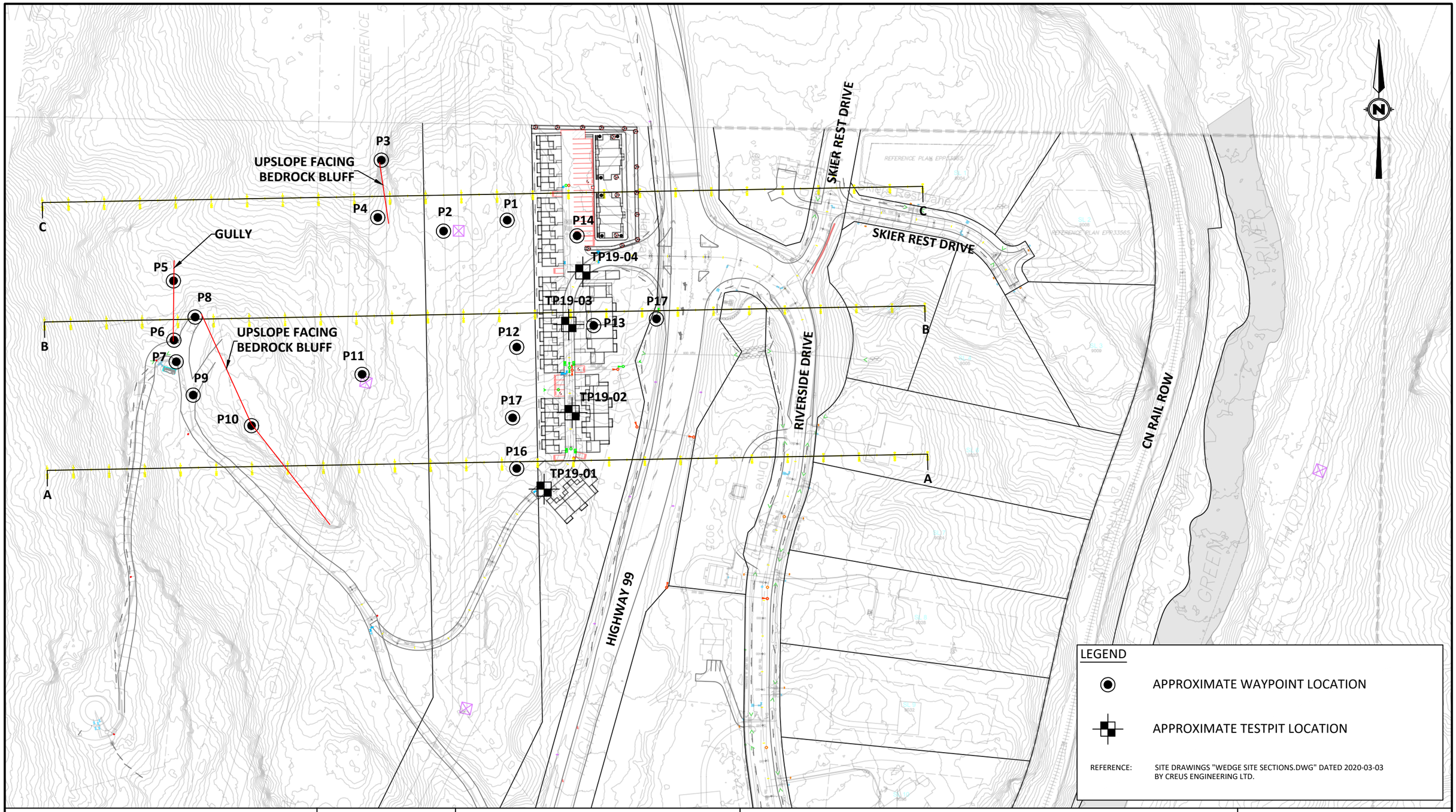
Plot Mode	Pole Vectors
Vector Count	103 (103 Entries)
Intersection Mode	Grid Data Planes
Intersections Count	5253
Hemisphere	Lower
Projection	Equal Angle

rocscience

DIPS 7.018

Project	K-180335-00 DIPS Analysis		
Analysis Description			
Drawn By	Peter Knott	*Company*	Kontur Geotechnical Consultants Inc.
Date	2025-08-28, 9:03:26 AM	*File Name*	Dips Potential rockfall PAK Aug 28 2025.dips7

APPENDIX D
Figures



April 9, 2020 2:24:17 PM

KONTUR GEOTECHNICAL CONSULTANTS inc.
Unit 65, 1833 Coast Meridian Road, Port Coquitlam, B.C. V3C 6G5
t. 1 (778) 730 1747 | toll-free. +1 (833) 301 7575 | e. info@kontur.ca | www.kontur.ca

SEAL

REVISIONS

NO	DESCRIPTION	DATE
0	ISSUED FOR REPORT	2020-04-09

TITLE: HISTORIC SLIDE AND LINEATION

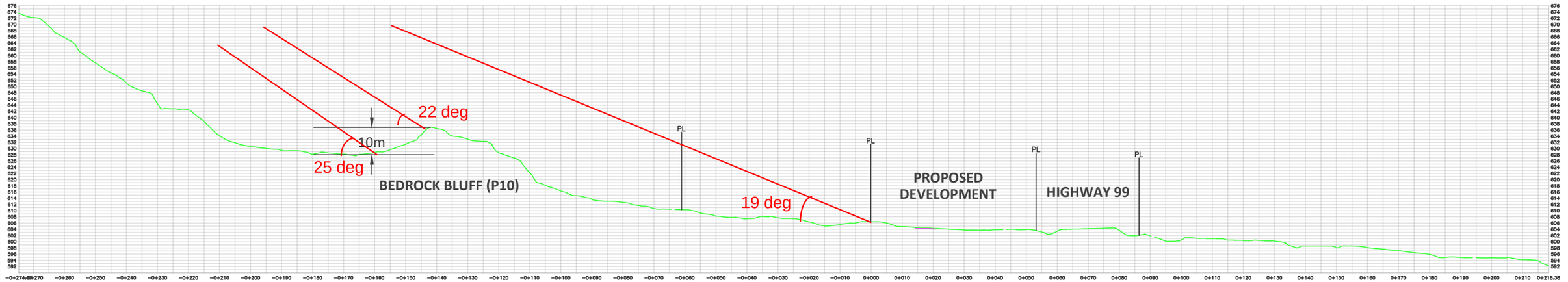
PROJECT NO.: K-180335-00

CLIENT: 28165 YUKON INC.

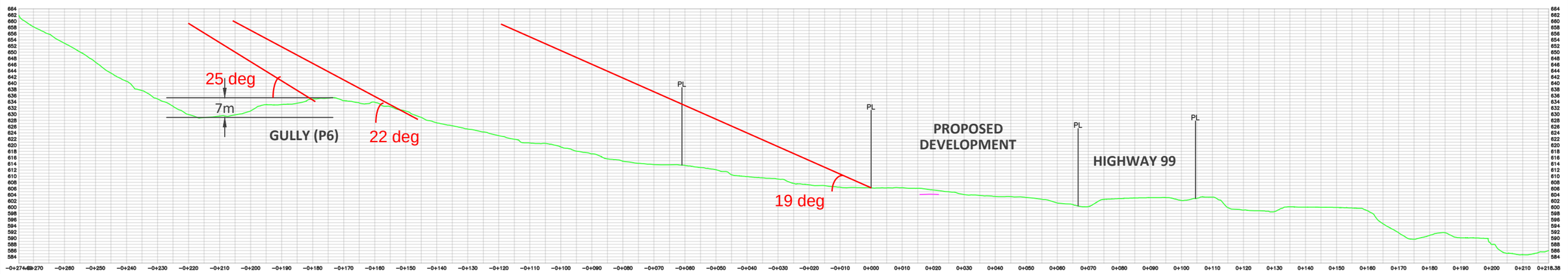
DATE: 2020-04-09 | SCALE: 1:2000 | DWG NO.: FIGURE 1

PROJECT LOCATION: PHASE 7 WEDGE WOODS WEST OF HIGHWAY 99, WHISTLER BC

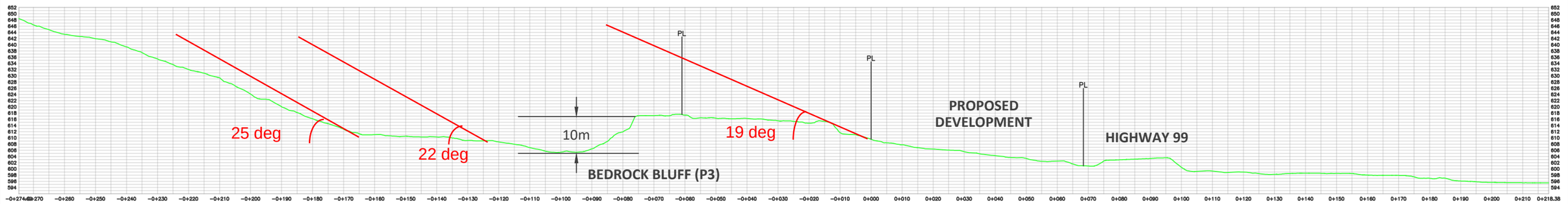
DRAFT: JL | DESIGN: - | CHECK: EGS



SECTION A-A



SECTION B-B



SECTION C-C

REFERENCE: SITE DRAWINGS "WEDGE SITE SECTIONS.DWG" DATED 2020-03-03 BY CREUS ENGINEERING LTD.

April 9, 2020 1:26:50 PM

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SEAL

REVISIONS

NO	DESCRIPTION	DATE
0	ISSUED FOR REPORT	2020-04-09

TITLE: PROFILE SECTIONS

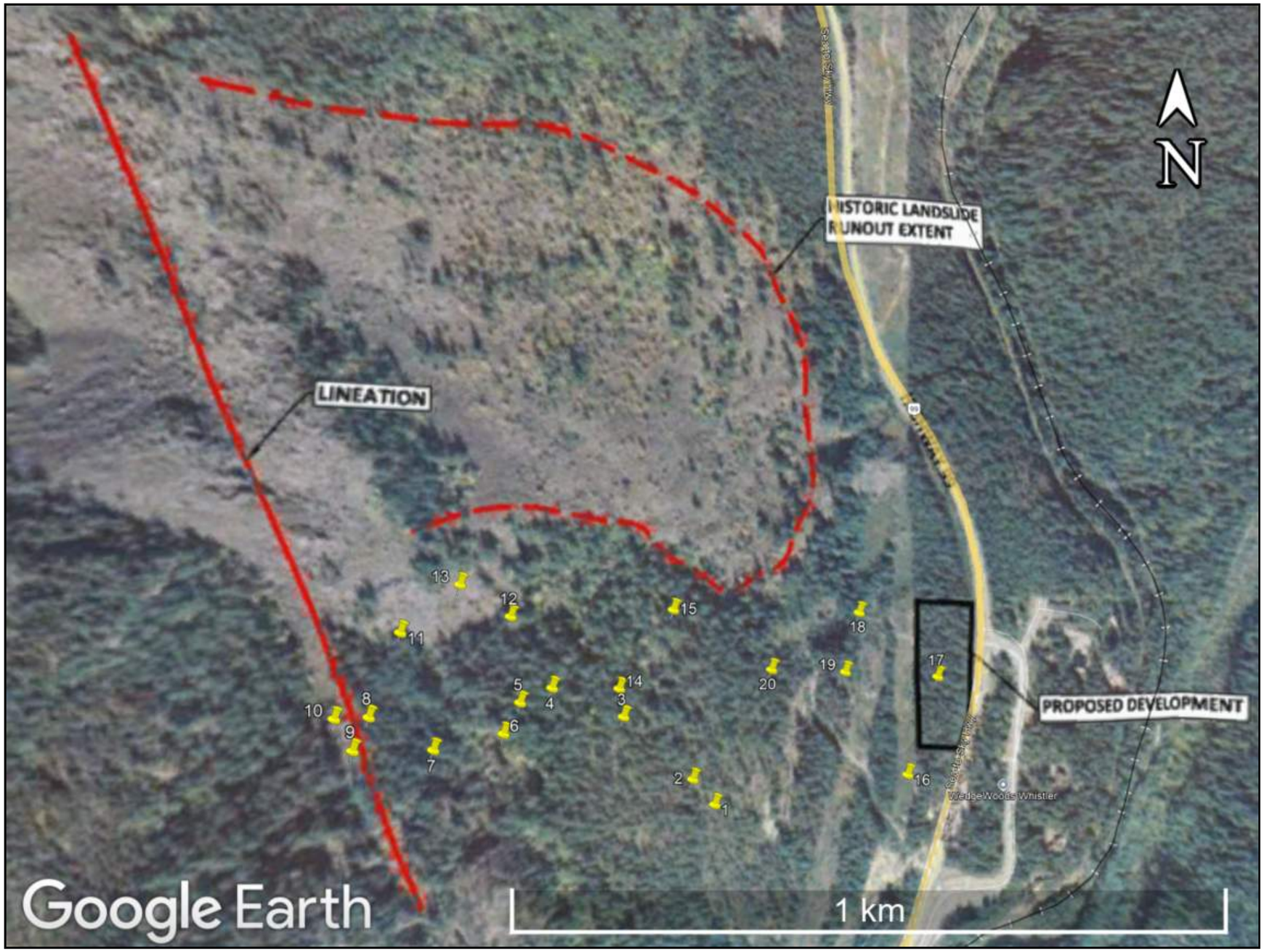
PROJECT NO.: K-180335-00

CLIENT: 28165 YUKON INC.

DATE: 2020-04-09 | SCALE: 1:1250 | DWG NO.: FIGURE 2

PROJECT LOCATION: PHASE 7 WEDGE WOODS WEST OF HIGHWAY 99, WHISTLER BC

DRAFT: JL | DESIGN: - | CHECK: EGS



Note: Base image extrapolated from Google Earth Pro

KONTUR GEOTECHNICAL CONSULTANTS inc.
Unit 103, 37768 Second Avenue, Squamish, B.C. V8B 0S8
t. 1 (778) 730 1747 | toll-free. +1 (833) 301 7575 | e. info@kontur.ca | www. **kontur**.ca

SEAL

VERSIONS

NO	DESCRIPTION	DATE
0	Issued for Review	Sep 5, 2025

TITLE: Approximate Waypoint Layout

CLIENT: 28165 Yukon Inc.

PROJECT LOCATION: 9000 Block, Highway 99, Whistler BC

PROJECT NO.: K-180335-00

DATE:	SCALE:	DWG NO.:
Sep 5, 2025	SHOWN	1

DRAFT:	DESIGN:	CHECK:
PAK	PAK	EGS

APPENDIX E
Photographs

Photo 1 – Large Isolated Rounded Boulder Within Proposed Development Site – Substantial Burial

Photo 2 – Large Rounded Boulders Substantially Buried, Above Proposed Development Site – P1

Photo 3 – Looking North BC Hydro Right-of-Way – Bedrock – P2

Photo 4 – Near Vertical Bedrock Bluff Facing West (Upslope) about 10m height – P4

Photo 5 – Bedrock Bluff (Photo 4) From Above

Photo 6 – Gully Oriented North-South – P6

Photo 7 – Top of Bedrock Bluff Facing Upslope – P9

Photo 8 – Bedrock Outcrops in BC Hydro Right-of-way – P11

Photo 9 – Flat Lying Surface Within Proposed Development

Photo 10 – Bedrock Outcrop Within Proposed Development

Photograph 11 – Waypoint 1

Photograph 12 – Waypoint 2

Photograph 13 – Waypoint 2

Photograph 14 – Waypoint 2

Photograph 15 – Waypoint 3

Photograph 16 – Waypoint 3

Photograph 17 – Waypoint 4

Photograph 18 – Waypoint 4

Photograph 19 – Waypoint 5

Photograph 20 – Waypoint 5

Photograph 21 – Waypoint 6

Photograph 22 – Waypoint 6

Photograph 23 – Waypoint 7

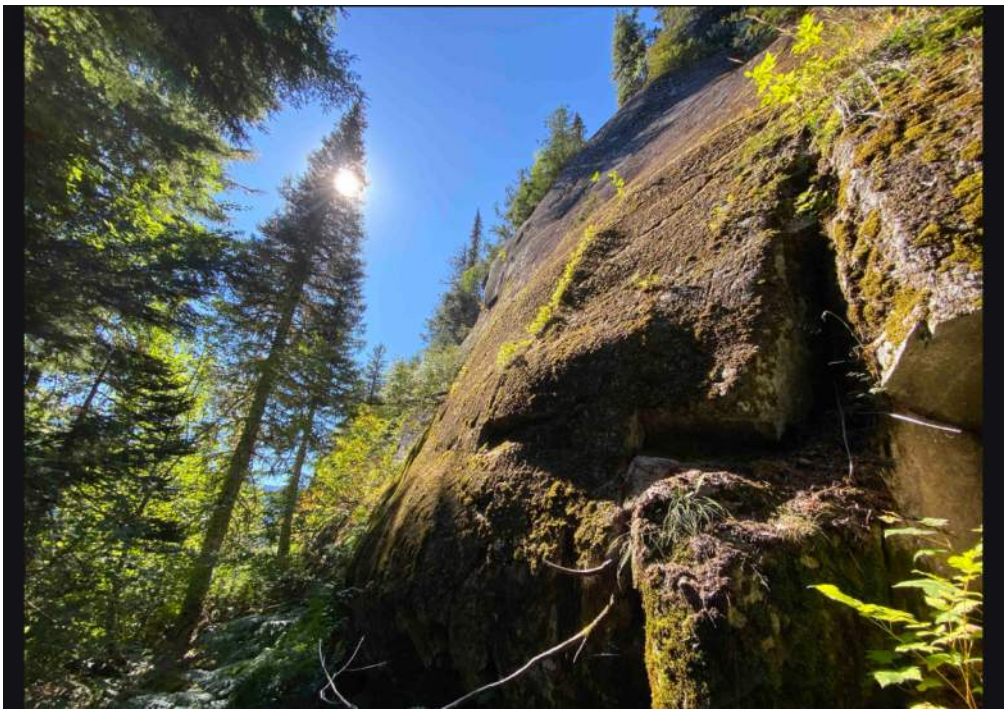
Photograph 24 – Waypoint 7

Photograph 25 – Waypoint 7

Photograph 26 – Waypoint 7

Photograph 27 – Waypoint 8

Photograph 28 – Waypoint 8



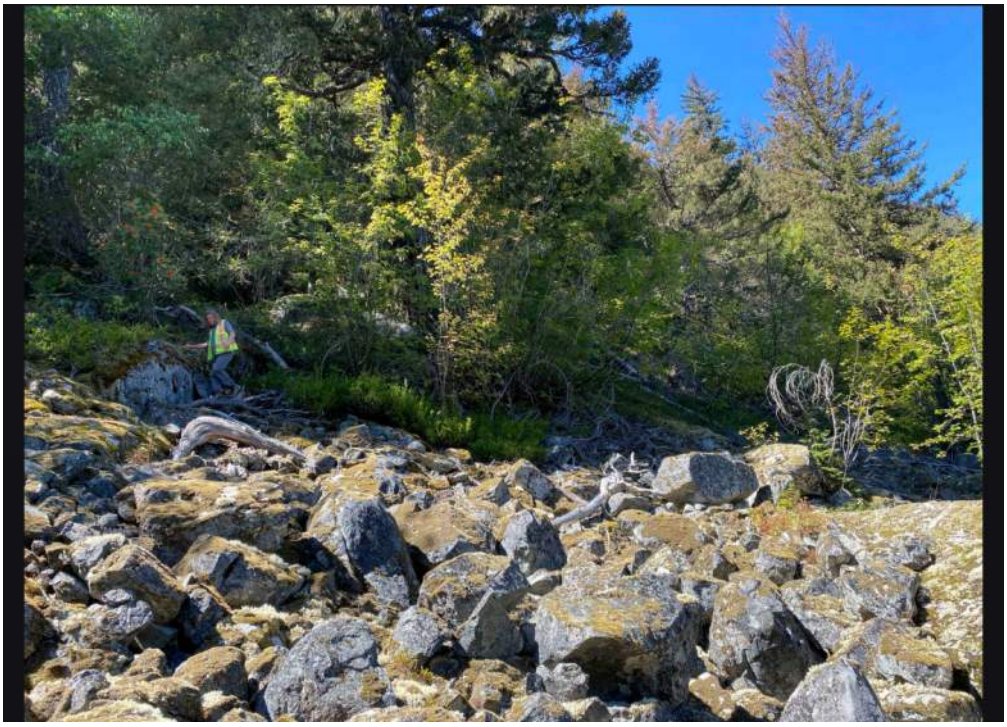
Photograph 29 – Waypoint 9

Photograph 30 – Waypoint 9

Photograph 21– Waypoint 9

Photograph 22 – Waypoint 10

Photograph 23 – Waypoint 10



Photograph 24 – Waypoint 10

Photograph 25 – Waypoint 11

Photograph 26 – Waypoint 12

Photograph 27 – Waypoint 13

Photograph 28 – Waypoint 14

Photograph 29 – Waypoint 15

Photograph 30 – Waypoint 15

Photograph 31 – Waypoint 16

Photograph 32 – Waypoint 17

Photograph 33 – Waypoint 18

Photograph 34 – Waypoint 19

Photograph 35 – Waypoint 20

APPENDIX F
Appendix D : Landslide Assessment Assurance Statement

LANDSLIDE ASSESSMENT ASSURANCE STATEMENT

Notes: This statement is to be read and completed in conjunction with the Engineers and Geoscientists BC *Professional Practice Guidelines – Landslide Assessments in British Columbia* ("the guidelines") and the current *BC Building Code* (*BCBC*), and is to be provided for Landslide Assessments (not floods or flood controls), particularly those produced for the purposes of the *Land Title Act*, *Community Charter*, or *Local Government Act*. Some jurisdictions (e.g., the Fraser Valley Regional District or the Cowichan Valley Regional District) have developed more comprehensive assurance statements in collaboration with Engineers and Geoscientists BC. Where those exist, the Qualified Professional is to fill out the local version only. Defined terms are capitalized; see the Defined Terms section of the guidelines for definitions.

To: The Approving Authority (or Client) Date: September 10, 2025

Squamish Lillooet Regional District

PO Box 219, 1350 Aster St, Pemberton, BC V0N 2L0

Jurisdiction/name and address

With reference to (CHECK ONE):

- ☐ A. *Land Title Act* (Section 86) – Subdivision Approval
- ☒ B. *Local Government Act* (Sections 919.1 and 920) – Development Permit
- ☐ C. Community Charter (Section 56) – Building Permit
- ☐ D. Non-legislated assessment

For the following property (the "Property"):

District Lot 2247, Group 1, New Westminster District except Firstly Part in Plan VA23216 and Soundly Part in Plan BCP29086

Civic address of the Property

The undersigned hereby gives assurance that they are a Qualified Professional and a professional engineer or professional geoscientist who fulfils the education, training, and experience requirements as outlined in the guidelines.

I have signed, authenticated, and dated, and thereby certified, the attached Landslide Assessment Report on the Property in accordance with the guidelines. That report must be read in conjunction this statement.

In preparing that report I have:

[CHECK TO THE LEFT OF APPLICABLE ITEMS]

X 1. Collected and reviewed appropriate background information

X 2. Reviewed the proposed Residential Development or other development on the Property

X 3. Conducted field work on and, if required, beyond the Property

X 4. Reported on the results of the field work on and, if required, beyond the Property

X 5. Considered any changed conditions on and, if required, beyond the Property

6. For a Landslide Hazard analysis or Landslide Risk analysis, I have:

X 6.1 reviewed and characterized, if appropriate, any Landslide that may affect the Property

X 6.2 estimated the Landslide Hazard

X 6.3 identified existing and anticipated future Elements at Risk on and, if required, beyond the Property

X 6.4 estimated the potential Consequences to those Elements at Risk

7. Where the Approving Authority has adopted a Level of Landslide Safety, I have:

___ 7.1 compared the Level of Landslide Safety adopted by the Approving Authority with the findings of my investigation

___ 7.2 made a finding on the Level of Landslide Safety on the Property based on the comparison

___ 7.3 made recommendations to reduce Landslide Hazards and/or Landslide Risks

8. Where the Approving Authority has **not** adopted a Level of Landslide Safety, or where the Landslide Assessment is not produced in response to a legislated requirement, I have:
   - X 8.1 described the method of Landslide Hazard analysis or Landslide Risk analysis used
   - X 8.2 referred to an appropriate and identified provincial, national, or international guideline for Level of Landslide Safety
   - X 8.3 compared those guidelines (per item 8.2) with the findings of my investigation
   - X 8.4 made a finding on the Level of Landslide Safety on the Property based on the comparison
   - X 8.5 made recommendations to reduce Landslide Hazards and/or Landslide Risks
- X 9. Reported on the requirements for future inspections of the Property and recommended who should conduct those inspections

Based on my comparison between:

[CHECK ONE]

☐ the findings from the investigation and the adopted Level of Landslide Safety (item 7.2 above)

☒ the appropriate and identified provincial, national, or international guideline for Level of Landslide Safety (item 8.4 above)

Where the Landslide Assessment is not produced in response to a legislated requirement, I hereby give my assurance that, based on the conditions[1] contained in the attached Landslide Assessment Report:

A. SUBDIVISION APPROVAL

☐ For subdivision approval, as required by the *Land Title Act* (Section 86), "the land may be used safely for the use intended"
[CHECK ONE]
- ☐ with one or more recommended additional registered Covenants
- ☐ without an additional registered Covenant(s)

B. DEVELOPMENT PERMIT

☒ For a development permit, as required by the *Local Government Act* (Sections 488 and 491), my report will "assist the local government in determining what conditions or requirements it will impose under subsection (2) of [Section 491]"
[CHECK ONE]
- ☐ with one or more recommended additional registered Covenants
- ☒ without an additional registered Covenant(s)

C. BUILDING PERMIT

☐ For a building permit, as required by the *Community Charter* (Section 56), "the land may be used safely for the use intended"
[CHECK ONE]
- ☐ with one or more recommended additional registered Covenants
- ☐ without any additional registered Covenant(s)

[1] When seismic slope stability assessments are involved, Level of Landslide Safety is considered to be a "life safety" criteria, as described in Commentary JJJ of the *National Building Code of Canada* (*NBC) 2015*, Structural Commentaries (User's Guide – NBC 2015: part 4 of division B). This states:

> "The primary objective of seismic design is to provide an acceptable level of safety for building occupants and the general public as the building responds to strong ground motion; in other words, to minimize loss of life. This implies that, although there will likely be extensive structural and non-structural damage, during the DGM (design ground motion), there is a reasonable degree of confidence that the building will not collapse, nor will its attachments break off and fall on people near the building. This performance level is termed 'extensive damage' because, although the structure may be heavily damaged and may have lost a substantial amount of its initial strength and stiffness, it retains some margin of resistance against collapse."

Evan Sykes, P.Eng.
Name (print)

September 10, 2025
Date

Unit 103 - 37768 Second Avenue
Address

Squamish, BC V8B 0S8

778-780-1822
Telephone

Esykes@kontur.ca
Email

(Affix PROFESSIONAL SEAL and signature here)

The Qualified Professional, as a registrant on the roster of a registrant firm, must complete the following:

I am a member of the firm Kontur Geotechnical Consultants Inc.
(Print name of firm)

with Permit to Practice Number 1000925
(Print permit to practice number)

and I sign this letter on behalf of the firm.