PEX GEOSCIENCE CONSULTANTS LTD.

1220 GOVERNMENT STREET,
NELSON, B.C., V1L 3K8

July 24, 2020

Mr. Bill Kestell RPF
Woodlands Manager
Cooper Creek Cedar Ltd.

Dear Bill:

RE: Site Review of CP 414 blocks 1 and 3 and proposed roads in the Deception/Deep Creek Area.

On June 20th, 2019, you sent me an email requesting a site review of proposed blocks 001 and 003 in the Deep Creek (Deception Creek) area. The site review was requested because portions of the blocks and sections of the proposed road are within terrain classified as "P" (potentially unstable). The site review was requested to determine if a DTSFA was warranted. If terrain stability concerns were noted, the site review would transition into a DTSFA.

The terrain stability assessment made in this report is based on generally accepted practice described in "Guidelines for Terrain Stability Assessments in the Forest Sector-October 2010" published by EGBC.

This site review assumes good timber harvesting standards are met. Even if all standards are met there is still a possibility of landslides. Terrain assessment can reduce the likelihood of landslides but not eliminate it.

The field review was conducted by W. Halleran P.Geo on August 16th, 2019, the weather included heavy rain and high winds in the morning to mostly cloudy in the afternoon. A Samsung android tablet with the Avenza maps program and imported georeferenced development maps with satellite imagery were used in the field for navigation and note taking.

Inferences are made from observations of materials in soil pits, road cuts, and tree churns within and adjacent to the proposed blocks and roads during the field site review.

Observations:

Both the blocks and roads are underlain by ancient glacial features. Much of the area appears to have been a ‘Rock Glacier’. The portions of the blocks and road that are within the P polygons were traversed and inspected for instability. The stream that flows out of the Block 1 and crossed by the road was traversed and reviewed for sensitivity to altered flood frequencies and any evidence of past debris flows.

No evidence of instability was noted within the proposed blocks or within the stream. One small section of the proposed road crosses a short steep slope (station 409-17), it is likely that the actual road location will not traverse this slope for any length.

Conclusion:

The site review found no indicators that timber harvesting as proposed, will significantly increase the low likelihood of landslides. There is a low likelihood of debris slides initiating within the blocks and along the proposed roads.

A DTSFA is not required for the proposed blocks or roads.

Sincerely,

Will Halleran

Digitally signed by Will Halleran
DN: cn=Will Halleran, o=Apex Geoscience Cons., ou=Geotech, email=apexgeo@shaw.ca, c=CA
Date: 2020.07.30 11:07:01 -07'00'

Will Halleran, P.Geo.,
Apex Geoscience Consultants Ltd.

Figure 1

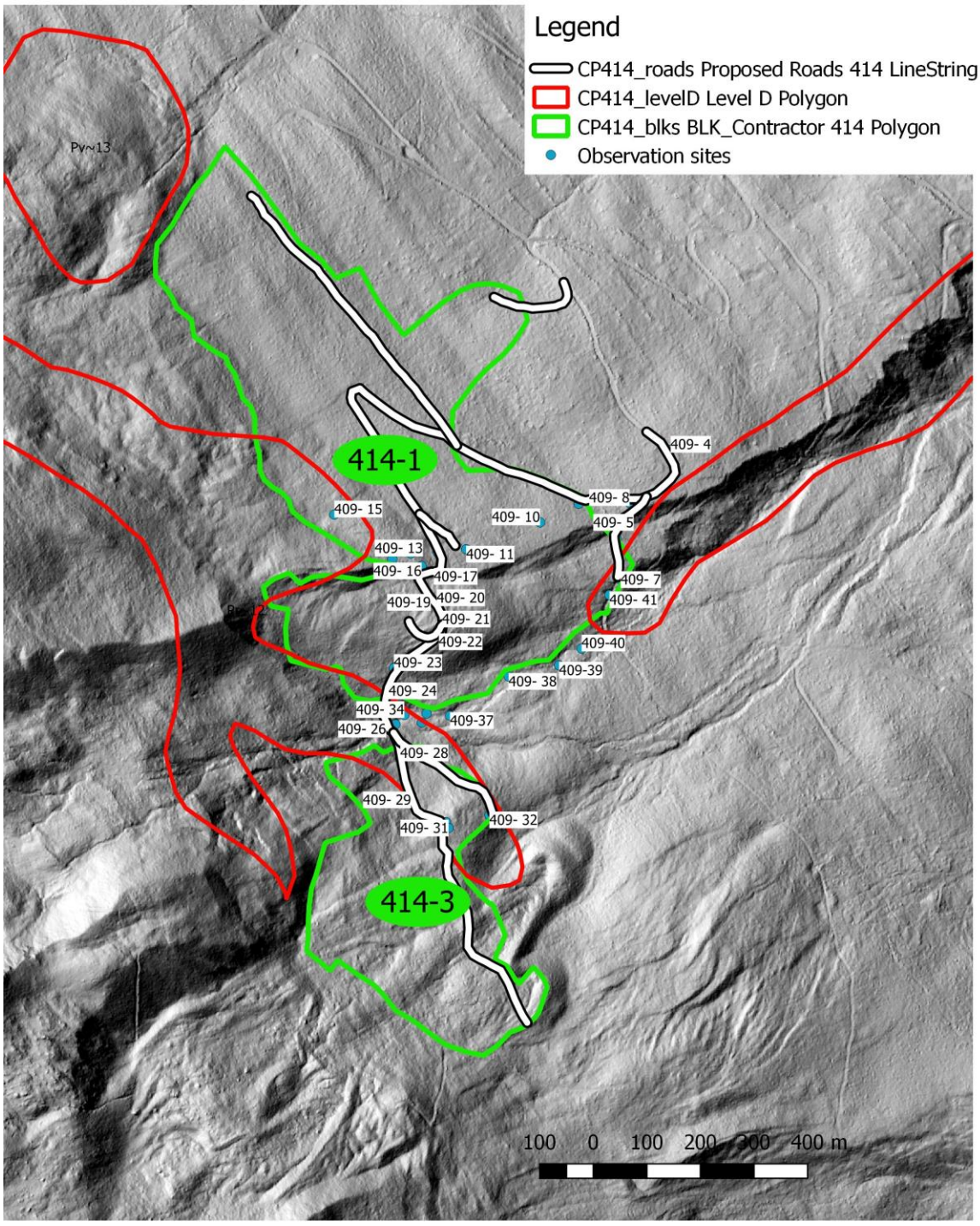
Legend
CP414_roads Proposed Roads 414 LineString
CP414_levelD Level D Polygon
CP414_blks BLK_Contractor 414 Polygon
Observation sites
Pv~13
414-1
414-3
409- 4
409- 8
409- 5
409- 10
409- 15
409- 13
409- 11
409- 16
409-17
409- 7
409- 41
409-19
409- 20
409- 21
409-22
409-40
409- 23
409-39
409- 38
409- 24
409- 34
409-37
409- 26
409- 28
409- 29
409- 32
409- 31
100 0 100 200 300 400 m

Table 1 Observations

Title	Description
409- 1	mossy boulder cascade.
409- 2	crossed wet zone, boulder.
409- 3	silty blocky bouldery terrain.
409- 4	existing road. currently heavy rain. periods of high gusty wind.
409- 5	existing 80 to 90% cut through scarp, silt 20%, sand 15%, sub rounded to angular well graded 65%, mod compact, minor sloughs, mod compact silt till. 65% slope below, looks 3/4 bench.
409- 6	small stream, fresh grizzly tracks. 20% slope.
409- 7	-75%, +30%, to here 25%, silt 15%, sand 10%, loose, well graded angular fragment, mixed with some rounded, occ large blocks, Till, ablation? 2m high cut stable at 85%. displaced material. main scarp was in basal till likely from ices sheet, this material likely associated with alpine glacier.
409- 8	old spoil site.
409- 9	to here 25%, silt till, now +40%/-20%, edge of regen.
409- 10	25% slope, silty sandy till.
409- 11	30%, silt till, very broadly stepped, some old cut wood here.
409-12	old road, trench at base of 50% slope, silt 20%, sand 10%, sub angular cf, loose, well grade, 70%, step must be rock controlled, mix of till and colluvium, ablation? from lidar looks like toe of apron.
409- 13	60%, loose silty sandy colluvium, good Bm, slope break just upslope. sand content increasing with elevation, near top sand 20%, silt 10%, gravel/rubble 70%, loose. steep for conventional.
409-14	onto 35% slope, below small sections up to 65%, loose, sandy rubble/gravel.
409- 15	30 to 40%, loose sandy rubble/gravel, colluviated mass.
409- 16	followed break, -75%, no sign of instability.
409-17	sand 15%, silt 10%, well graded subrounded to angular frags, 65%, loose, slope break to flat 6m down, here 6m up. allow fill to be supported by flat, minimise cut, balanced push forward.
409- 18	at bottom, always stayed close to bottom upper break gets to be about 25m up, fill out as much as possible, try to fill the crossing a bit, other side looks wet, large block in bottom, gradient 15%. no obvious channel.
409-19	short 55% slope, sandy rubble gravel, swale here just before sta. 57, culvert, not marked, or direct to bottom,
409- 20	sta. 58, -50%+35%.
409- 21	25%, draw, likely old tension cracks, occ large blocks.
409-22	looks like trenching.
409- 23	crossed 30 to 45% slope, upslope of 60%, trench between road and slope, well removed, here 35%, sandy silty rubble gravel with scattered blocks. lots of cut trees, mineral exploration?
409- 24	block boundary, -50%/+30%, ancient slump scarp just below, fill will not reach it,
409- 25	road crossed crown of ancient slump, likely caused by undercut, 65% scarp, 50% slope, make sure fill does not encroach on creek,
409- 26	creek crossing, mossy boulders, d20 mobile, gradient +65%, -50%, wood. step below, could be rock step, or very large blocks. likely rock, phyllite competent, noticed more blocks back, slump could be rock step.
409- 27	road crossed at base of snort 70% slope, -50%, sandy colluvium could be close to rock. here at jct. -40%, +65%, stepped.
409- 28	+65%/-20%, pit 20cm sandy silty soil, then either rock or 90% cf, schist with quartz. broken terrain, on lower road as well.
409- 29	40 to 25%, to here could see lower road, same terrain.
409- 30	looks like more trenching very old, sandy rubble to here, below short steeper pitch, to short for slide, here on 20% broad ridge. going to look at
409- 31	35%, head over to lower spur, not going to look at rock glacier/terminal moraine.
409- 32	just in to 45% slope, to here 35%, small lobes when material was deposited wet. cut trees likely for skiing, trenches actually old cracks.
409- 33	back to jct, slope did not exceed 55%, here short +85% snout, -40%, can see old debris lobe in valley ahead

	with sharp 90% snout.
409- 34	stream gradient to here 45%, now 10%, large woody debris steps and boulder cascade, below boulder steps wood spanning, some cut wood across creek.
409- 35	almost all water comes from a spring just upslope of here on north side.
409- 36	source. does not look variable's gps may be off. a smaller one just north in swale.
409-37	small springs on sides, old wood in channel, 10% gradient.
409- 38	start of 30% gradient, split just at start, meanders over flats to here. photo 20m down. 2m bank on north, more gradual on south.
409-39	splits around flat, both become mod confined
409-40	10% to here, now 20 to 30% 1m entrenched.
409- 41	continual seeps and springs in cut from creek to here. +35%-55, conditioned soils. likely water out of toe of displaced material upslope