

Review of Avalanche Exposure Affecting The Proposed Glacier-Winner Creek Development Project

Prepared by Doug Fesler
Alaska Mountain Safety Center, Inc.
February 9, 2007

1. Objectives of the Avalanche Review:

The purpose of this project is to review three proposed development plans for the proposed Glacier-Winner Creek area (exclusive of downhill ski area development) and to assess any potential avalanche exposure affecting the planned development: These areas include: a) the extension of the Arlberg Road past Winner Creek (DOWL Eng. Ltd), b) the proposed development of residential housing pods (SE Group), and c) the creation of system of beginner, intermediate, and advanced Nordic ski trails (The Boutet Co.). Additionally, any oversights in avalanche hazard mapping are noted.

2. Summary of Findings:

1) Of the seventeen development pods outlined in the real estate development zone, three are potentially exposed to avalanche risk or have inadequate buffer zones between the proposed development and nearby major avalanche paths. These are pods “A”, “Q”, and “R” and all are located along the north side of Glacier Creek (see Figures 1-3). Mitigation is simply a matter of ensuring an adequate buffer distance between the developments and the paths. This will mean a slight reduction in developable area but an increase in margin of safety.

2) The Arlberg Road extension corridor is not exposed to major avalanche threat, but could potentially be impacted by small bank sluffs (i.e., steep side slopes less than 150’ high) at a couple of steep locations in the vicinity of Winner Creek. This depends upon final alignment and construction. These areas can be easily mitigated by structural protection, if needed.

3) Of the five proposed Nordic ski trails, only the intermediate trail (Trail D) comes close to any avalanche areas. A portion of this trail skirts just outside the limits of the moderate hazard zone (i.e., the limits of the “hundred year” avalanche) along the north face of Mt. Alyeska. Avalanches capable of “dusting” the trail would be extremely rare, but possible under exceptional conditions. Under these conditions, skiers would experience a condition similar to a sudden squall with blowing snow, twigs, and small branches. Additionally, three existing trails pass through moderate hazard zones, including one just east of the proposed intermediate trail (see Figure 4), one along Crow Creek Road, and one southeast along Winner Creek. Though these trails skirt through exposed avalanche areas, no documentation exists of interactions between skiers and avalanches. As a general rule, trail development in avalanche prone areas should be avoided and the avalanche risk in these areas should be posted as a precaution.

4) A portion of Crow Creek Development Area may be exposed to potential avalanche threat from one or more avalanche paths, but because the map delineating this development pod (Figure 14, S E Group report, 2006) did not include the entire western boundary of the parcel, the extent of exposure, if any, is unknown (see Figure 5). Additionally, the avalanche hazard mapping of this area is not accurately portrayed on MOA avalanche maps and needs to be re-

evaluated and mapped using the latest available technology (i.e., LIDAR, aerial photos, etc.). See number 5 below.

5) In cases where any uncertainty existed between prospective development and avalanche exposure within the study area, the avalanche paths in question were re-evaluated and mapped (see Figure 6).

6) Lastly, all of the MOA avalanche hazard maps within the Glacier-Winner Creek valleys (including areas outside the study area) were preliminarily reviewed for accuracy. Several errors – in some cases, significant errors – were noted. These included areas delineated as high or moderate avalanche hazard zones that have no avalanche exposure affecting them and areas indicated as non-hazard zones that actually have high or moderate hazard. In some cases, these errors are due to technical transfer problems, false imaging from older mapping processes, availability of new avalanche information, or inaccuracies associated with mapping processes. The areas in question are outlined in Figures 7 and 8 and include:

- a) the west side of Glacier Creek valley from Turnagain Arm to California Creek;
- b) the west side of Glacier Creek to Crow Creek (partly included in this study);
- c) all of Crow Creek drainage from Glacier Creek to Crow Pass trailhead;
- d) the east side of Glacier Creek valley from Turnagain Arm to Virgin Creek; and
- e) the remaining portion of Alyeska Resort from the Arlberg Road to the Glacier Bowl ridgecrest and Max's Mountain.

3. Recommendations:

1) Contract with a qualified avalanche professional to clear up the discrepancies outlined in Section 2, #6 above. All areas within the MOA should be mapped to the same standard of accuracy to ensure credibility. This effort will require LIDAR coverage of the affected areas, stereoscopic color photos of approximately 1":1500' scale, and the best available topographic maps at approximately 1":1000' scale.

2) Have the MOA/ITD section create a map with the boundaries of the proposed development pods and the avalanche hazard zones plotted on the same map.

3) Place public warning signs along trails and roads in areas exposed to potential avalanche risk. Recommended wording: "Entering Avalanche Area! Do Not Stop!"

Sources/References:

The following documents were carefully reviewed for this project.

- *Glacier-Winner Creek Access Corridor Study, 1996, DOWL Engineers*
- *Glacier/Winner Creek Resort Development Terrain Suitability Study, 2006, SE Group*
- *Snow Avalanche and Mass-Wasting Hazard Analysis, 1993, Alaska Mountain Safety Center, Inc. (Fesler & Fredston) and Arthur I. Mears, P.E., Inc.*
- *2006 Winner Creek Trails Feasibility Study, 2006, The Boutet Co. Inc.*