Development of Preventative Streamside Landslide Buffers on Managed Timberlands in Northern California

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Shallow streamside landslides are a principle source of sediment on managed timberlands in Northern California. Using an adaptive management process, LiDAR, and a detailed field-based landslide inventory, Green Diamond Resource Co has redefined the interim preventative landslide tree-retention buffers it applies to steep streamside slopes along fish bearing (Class I) and non-fish bearing (Class II) watercourses. The application of these buffers are dependent on slope gradients and when applied, enhance and in some cases, expand upon the customary riparian buffers associated with these watercourse types in our California timber harvest plans. They are designed to significantly reduce the amount of management related sediment delivery associated with landsliding when compared to historical management practices.

Initially, the steep slope prescriptions were developed from a pilot field inventory of streamside landslides during the development stages of an Aquatic Habitat Conservation Plan (AHCP). The Steep Slope Delineation project was a long term research project associated with an AHCP monitoring program. The objective of the project was to redefine the initial prescriptions based on a comprehensive field-based landslide inventory. The first phase of the steep slope project was completed in 2011, and in 2015 we completed the final phase.

The final results of the Steep Slope Delineation project covered 359,620 acres of privately owned timberlands in California. The work included a review of aerial photographs, detailed field survey of slopes adjacent to 357 half-mile long watercourse segments, and analysis of the resulting data. These data characterize more than 2,000 landslides that define new maximum buffer widths and new slope gradient buffer triggers that are exclusive to four geographic areas within the ownership. While the majority of the buffer widths decreased nearly one third increased in width. As for the slope triggers, slightly more than half of the slope gradients decreased, nearly half had no change, and a few increased. The revised steep slope prescriptions were submitted to federal agencies in December of 2014 and were successfully incorporated into the AHCP in January of 2015.