

CHANNEL EROSION AND LANDSLIDE SEDIMENT DEPOSITION IN THE BEAR CREEK SUB-BASIN, LOWER EEL RIVER WATERSHED, HUMBOLDT COUNTY, CALIFORNIA

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Poster Session: The Bear Creek sub-basin (Bear Creek) contains about 8.5 square miles or about 5,440 acres of Redwood forested uplands in Humboldt County, California. Bear Creek is contained with-in the Eel River watershed and is extensively characterized in the final analysis of the Lower Eel River and Eel River Delta watershed (Hart Crowser, 2004). The purpose of this study was to investigate and provide further understanding of the depositional environment for the sub-basin and the relatively quick recovery of the system. In particular, we provide our observations of recent erosion, landsliding and deposition in Bear Creek as it relates to the 1996/1997 storm events that led to an impaired listing of this stream (State of California, 2000). During the 1996/1997 wet season, a series of storms resulted in relatively large surface water runoff. The associated erosion provided an influx of sediment to the Bear Creek drainage network (PWA 1998). The seemingly significant changes that occurred within Bear Creek raised concern (California Regional; Water Quality Board, 2000) about the environmental impacts of the event and the ability of the stream system to recover. Concern focused on the potential role of logging practices in contributing to those impacts and influencing erosion, landsliding and the resulting magnitude of the sediment volume delivered to Bear Creek as a result. This study does not include analyses of logging practices nor does it attempt to address the complicated and interwoven issues surrounding differences between management practices and the natural physical processes.

High slope angles, adverse rock unit dip angle/direction, moderate to low soil strength and relatively high annual precipitation combined in a way to create conditions favorable for increased sediment delivery in Bear Creek and other near-by sub-basins. It is also important to note that, based on the Lower Eel watershed analysis, the estimated incidence of landsliding is significantly lower between 1988 and 2000 than during any other photographic periods bracketed in the analysis (Hart Crowser 2004). The apparent volume of sediment deposited within Bear Creek associated with the 1996/1997 events is comparable to estimated sediment volumes associated with historical events as documented within the stratigraphic record. At least three separate events distinguished in the stratigraphic record with carbon dating estimates of several thousand years contributed substantially larger sediment volumes in comparison to the 1996/1997 events.