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Detailed Study Plan for Documenting Soil Disturbance in Selected South Fork Caspar Creek Sub-Watersheds being Studied as part of the UC Davis Nutrient Study (EMC-2017-001)

July 21, 2017

Conduct a post-harvest survey for each of the 3 South Fork nutrient study sub-watersheds to be harvested (TRE 35% harvest, UQL 55% harvest, ZIE 75% harvest) to document the amount of soil disturbance.

Rapid mapping of sediment hotspots (significant amounts of bare soil near stream channels) will occur using research grade GPS. Areas greater than 100 square feet will be mapped that are within the WLPZ.¹ The cause of soil disturbance will be recorded (skid trail, cable corridor, etc.). This work will be supplemented by the PSW annual erosion surveys conducted for the gaged tributaries (Keppeler 2017). The PSW landslide and fluvial erosion feature survey work includes:

- a) Walking all South Fork gaged channels. For large erosion events (>10 yd³), staff measure and sketch the slide void, deposition, and position relative to the stream; photographs with a stadia rod for scale are also taken.
- b) Erosion features with lower volumes are also mapped (3-10 yd³), but sketch maps are not produced of the feature.

Conduct a post-harvest survey for each of the 3 harvested South Fork nutrient study sub-watersheds to document the amount of organic debris and sediment delivered to each of the channels.

Rapid mapping of significant volumes of fine and coarse organic debris and sediment deposited in or near stream channels will occur with research grade GPS. Sediment deposition amounts of greater than one cubic yard will be recorded, as will logging-related organic debris exceeding an area covered by one square yard. The cause of sediment and organic debris deposition will be recorded (skid trail, cable corridor, tree felling, etc.). The PSW annual erosion surveys for the gaged tributaries will also complement this task.

Produce a stratification of the yarding methods used in the 3 South Fork nutrient study sub-watersheds harvested to further quantify the amount of disturbance in basin.

Field verification of the THP-specified yarding boundaries (tractor vs cable) will occur with research grade GPS mapping.

Document the soil types present in each of the 4 South Fork nutrient study sub-watersheds.

The NRCS web soil survey (<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>) SSURGO data will be utilized for this task to determine if significant background differences exist (e.g., soil chemistry) that could influence nutrient and sediment input to stream channels.

To ensure that this work is completed, CAL FIRE and the PSW added the following task to 2017/2018 Caspar Creek Annual Workplan on May 10, 2017:

- A. Develop a plan for conducting post-harvest disturbance mapping in South Fork Caspar Creek, including (1) mapping significant amounts of bare soil near stream channels, (2) significant volumes**

¹ 100 square feet is specified in the CA Forest Practice Rules, 14 CCR 916.9(n)(1). Soil stabilization is required for the following areas: (A) Areas exceeding 100 contiguous square feet where timber operations have exposed bare soil.

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of organic debris and sediment deposited in or near stream channels, and (3) field verification of THP-specified yarding methods.

Water sampling for the nutrient study is being conducted for the following SF Caspar Creek sub-watersheds:

WIL (0% harvest, control)

TRE (35% harvest)

UQL (55% harvest)

ZIE (75% harvest)

Reference:

Keppeler, E. 2017. Documenting landslides and fluvial erosion features in the Caspar Creek watershed. Unpublished document revised June 19, 2017. USFS Pacific Southwest Research Station. Fort Bragg, CA. 3 p.