treatment data and are expected to show decreases in most fuels for the mastication/prescribed fire treatment, but only decreases in canopy and 1000-hour surface fuels in the mastication treatment. Custom fuel models will be developed for masticated areas which will be calibrated with fire behavior measurements taken during the prescribed burn treatment. The results of this project will be useful to land managers needing to predict potential fire behavior, fuel loads and tree mortality associated with mastication and mastication/prescribed fire treatments.

4 FIRE MODELING WITH FLAMMAP AND FARSITE IN THE UPPER MOKELUMNE WATERSHED

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Fire behavior was modeled throughout the Upper Mokelumne River watershed to gain a better understanding of high risk areas and potential impacts from a fire. In addition, WARMF Watershed Analysis Risk Management Framework analysis of water quality impacts resulting from a simulated fire was conducted based on the fire behavior modeling. Two distinct fire models were used. FlamMap was used to determine the relative hazard and flammability of areas throughout the watershed. FlamMap also served as the basis for the Treatment Optimization Model, which locates where fuel treatment might be most effective in slowing fire spread. FlamMap also helped provide necessary information when deciding upon the locations for potential ignitions sites (or places where fires could start). FARSITE, the second fire model, was then used to simulate fire spreading based on the ignition sites as well as the flammability assigned by FlamMap. The outputs of FARSITE were translated into burn severity categories. The spatial distribution of three burn severity categories was then used as an input to WARMF in order to describe potential effects on water quality. This poster describes the fire behavior prediction models themselves, and the inputs required for those models. The poster details sources for the required information and the interpretations of the outputs. Maps of fire growth and fire behavior characteristics are included for sample ignition simulations. This poster then presents the translations between fire behavior predictions and a specific fire effect - burn severity. The distribution of predicted burn severity is illustrated for the watershed, and for the ignition simulations selected for further analysis with WARMF. This poster displays the utility of assessing fire behavior in the Mokelumne River watershed with a science-based analysis aimed at identifying fire/fuel management recommendations in the watershed management plan. The fire modeling programs, FlamMap and FARSITE identified the potential impact to water quality from large fires, and several moderately-sized fires. These same programs were used to help identify the most suitable locations for fuel treatment in the watershed management plan in an idealized landscape. Recommending the location of high priority locations for action (regardless of ownership), and best options for action is an important task for the stakeholders in this joint powers agency.

2 HERPETOFAUNAL RESPONSE TO WILDFIRE

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In 2003, southern California experienced several large fires which burned thousands of hectares of wildlife habitats and conserved lands. In order to investigate the effects of the fires on reptile and amphibian communities, we compared the results from sampling herpetofauna and vegetation several years prior to the fires to results from sampling in the second and third years after the fires among 38 burned and 17 unburned plots. The sampling plots were spread over four vegetation

types and four open space areas within San Diego County. Our capture results indicated that burned plots of chaparral and coastal sage scrub lost herpetofaunal species diversity after the fires and displayed a significant shift in overall community structure. Concomitantly, post-burn herpetofauna community structure was more similar to that found in unburned grassland. We did not find differences in herpetofaunal species diversity or community composition in grasslands or woodland/riparian vegetation. We saw increases in the net capture rates for several lizard species, including Aspidoscelis tigris, Phrynosoma coronatum, and Uta stansburiana in burned chaparral plots and Aspidoscelis hyperythra and Uta stansburiana in burned coastal sage scrub plots. Additionally, we documented decreases in the area occupied by lizards (Elgaria multicarinata), salamanders (Batrachoseps major), and snakes (Coluber constrictor, Lampropeltis getula, Pituophis catenifer, and Masticophis lateralis) in coastal sage scrub, chaparral, or both after the fires. We foresee that a continued unnatural fire regime for southern California will result in a simplification of the southern California reptile and amphibian communities.

21 THE ROLE OF FIRE REFUGIA IN THE DISTRIBUTION OF PINUS SABINIANA

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Although widespread throughout the interior foothills of central and northern California, Pinus sabiniana Dougl. has a disjunct distribution in the southern Sierra Nevada. In the southern part of this mountain range, P. sabiniana is abundant in the southern-most watersheds, the Kern and the Tule, but is absent from the Kaweah river watershed. This gap in the pine's distribution corresponds to a region of steeper topography within its elevational range. Observations from the populations south of this gap, in the Kern watershed, suggest that during intense fires, most trees survive only in alluvial plains near the watercourses. We hypothesize that such fire refugia are necessary for the long term persistence of P. sabiniana and the lack of alluvial refugia in the Kaweah watershed may contribute to the pine's absence from this region. To test this hypothesis, we studied the age-structure of P. sabiniana in the area of the 2002 McNally fire in the Kern to compare age distributions near to and distant from watercourses. Maximum age declines significantly with distance from watercourses, suggesting that past fires have eliminated P. sabiniana from the slopes and that the pines have re-colonized during fire-free intervals.

44 SMOKE TRAINING AND CHANGING REGULATIONS – AN UPDATE FROM THE FIRE AIR COORDINATION TEAM (FACT)

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Fire has the greatest potential to affect human health of any other source on public and private lands. Changes in air quality regulations are changing the way the fire programs operate and will affect how land management objectives are met. Tightening of air quality standards to protect public health will result in more non-attainment areas across the US (all regions). Current approaches to smoke management and prescribed fire have resulted in local and interstate exceedances of existing public health standards. A clear understanding of these issues and changes will be important to minimizing future impacts. The Fire Air Coordination Team (FACT) has been developing training for line officers and fire management staff. Online training for line officers consists of a half hour overview of regulation changes with more in depth modules on key topics. Training to help fire managers meet potential challenges on a national scale with state level implementation, using a pro-active approach, ensuring timely decisions, and