MARIN WATER

Staff Report

Watershed Fuels Modeling Update

Informational Item

TO: Watershed Committee/Board of Directors (Watershed)

FROM: Shaun Horne, Watershed Resources Manager

THROUGH: Ben Horenstein, General Manager

DIVISION NAME: Watershed

ITEM: Watershed Fuels Modeling Update

SUMMARY

The District is conducting vegetation management and forest restoration projects as part of the implementation of the Biodiversity Fires and Fuels, Integrated Plan (BFFIP). Forestry restoration work was carried out in the vicinity of Potrero Meadows in 2020/2021 as part of the One Tam Forest Health Project, which received grant funding from the California Coastal Conservancy's Wildfire Resiliency Program. As part of the grant, the District implemented 70 acres of forest restoration and conducted a pilot Fuels Modeling effort to evaluate fire behavior following treatment. Modeling showed that in treated areas flame lengths, rate of spread and crowning were all reduced. Building on this effort, Marin Water has contracted with Tukeman Geospatial to conduct a watershed-wide fuels modeling effort to evaluate work completed as part of the BFFIP.

DISCUSSION

California is facing unprecedented wildfire crisis as a result of decades of fire exclusion and increasing impacts associated with climate change. In many of California's ecosystems, biodiversity, carbon stability and overall ecological resilience are dependent on the regular occurrence of fire. In addition, the wildfire seasons over the past few years have brought record impacts to communities, critical infrastructure and ecosystems.

In October of 2019, the District adopted the Biodiversity, Fire, and Fuels Integrated Plan (BFFIP) which describes the actions the District will implement to reduce wildfire hazards and to maintain and enhance ecosystem function. Under the BFFIP, there are 27 management actions that are being implemented to fulfill the goals and approach described in the plan. Vegetation management under the BFFIP aims to reduce fuel loads, maintain fuelbreak infrastructure, preserve defensible space, and reduce invasive weed species. Vegetation management is

conducted continuously throughout the year with the chief goal of reducing fuel loads and maintaining the watershed's biological diversity.

In collaboration with One Tam, the District was awarded an $800,000 grant from California State Coastal Conservancy to develop a Forest Health Strategy for public lands in Marin County, conduct a pilot forestry restoration project, and model the efficacy of the forest restoration treatments. The pilot fuels modeling effort was conducted near Potrero Meadows. Tukeman Geospatial collected field data on recent forestry fuel treatments conducted by the District and its contractors in 70 acres of forest surrounding Potrero meadows, then modeled fire behavior pre and post treatments using FlamMap.

The results of the pilot fuel modeling effort show a dramatic decrease in fire behavior within the 70 acres of treated forestry units surrounding Potrero Meadows. In forest units where the continuity of the understory fuels was reduced through a combination of hand crews and machine mastication, modeled pre and post treatment wildfire flame lengths decreased from 4 ft -20 ft to less than 2ft and the rate of fire spread decreased from 4 ft – 18 ft/min. to less than 4 ft/min. In addition, the reduction in understory fuels, primarily composed of dead tank oak and encroaching small diameter Douglas fir trees, significantly reduced the crowning behavior of a wildfire moving through these areas.

This pilot modeling effort confirms the benefits of fuel reduction to reduce fire behavior and impacts to vegetation and habitat. Strategically located and carefully constructed fuel treatments have been shown to improve forest resilience through increased tree vigor, drought and disease resistance. In addition, strategically placed fuels reduction projects can provide a tactical advantage during fire suppression efforts. These efforts result in improved water quality for Marin Water customers and would help protect local water supplies from negative impacts resulting from potential wildfire.

To better understand the potential risks to critical facilities, neighboring communities and the efficacy of existing and proposed fuel reduction efforts, Marin Water has scaled up this fuel and fire behavior modeling work. In an effort to better understand wildfire behavior across the watershed, within treated and untreated areas, Marin Water entered into a contract (MA 6042) with Tukeman Geospatial on Novermber 30, 2021 to provide the following:

- Collect data on watershed wide existing fuel treatment locations and types.

- Conduct field assessments of fuel treatment characteristics, map and then model fire behavior using FARSITE software, with and without treatments, under varying weather scenarios.

- Develop a geodatabase of values at risk. This modeling will evaluate the efficacy of current treatments, compare the probability of loss as well as assist with providing recommendations on planned fuel treatment locations and types.

- Training on the use of FlamMap.

- Final report to include fuels geospatial data and include future treatment recommendations.

The results of this modeling effort by Tukeman Geospatial are expected late fall 2022. Staff will provide an overview of the pilot modeling work completed to date and highlight the work planned for 2022.

FISCAL IMPACT
None

ATTACHMENT(S)
None