



Watershed

BFFIP FY 2023 Report

September 21, 2023



Outline

- Vegetation and Wildfire Coordination
- Environmental Compliance & Monitoring
- Vegetation Management Actions
- Management Costs
- BFFIP Y5 Work Plan



BFFIP Overview

Biodiversity, Fire, and Fuels Integrated Plan

- The BFFIP focuses on the actions that the District will implement to reduce fire hazards and to maintain and enhance ecosystem functions.

Goals

- Minimize the risk from wildfire
- Preserve and enhance biological resources
- Provides an adaptive framework for periodic review and revisions

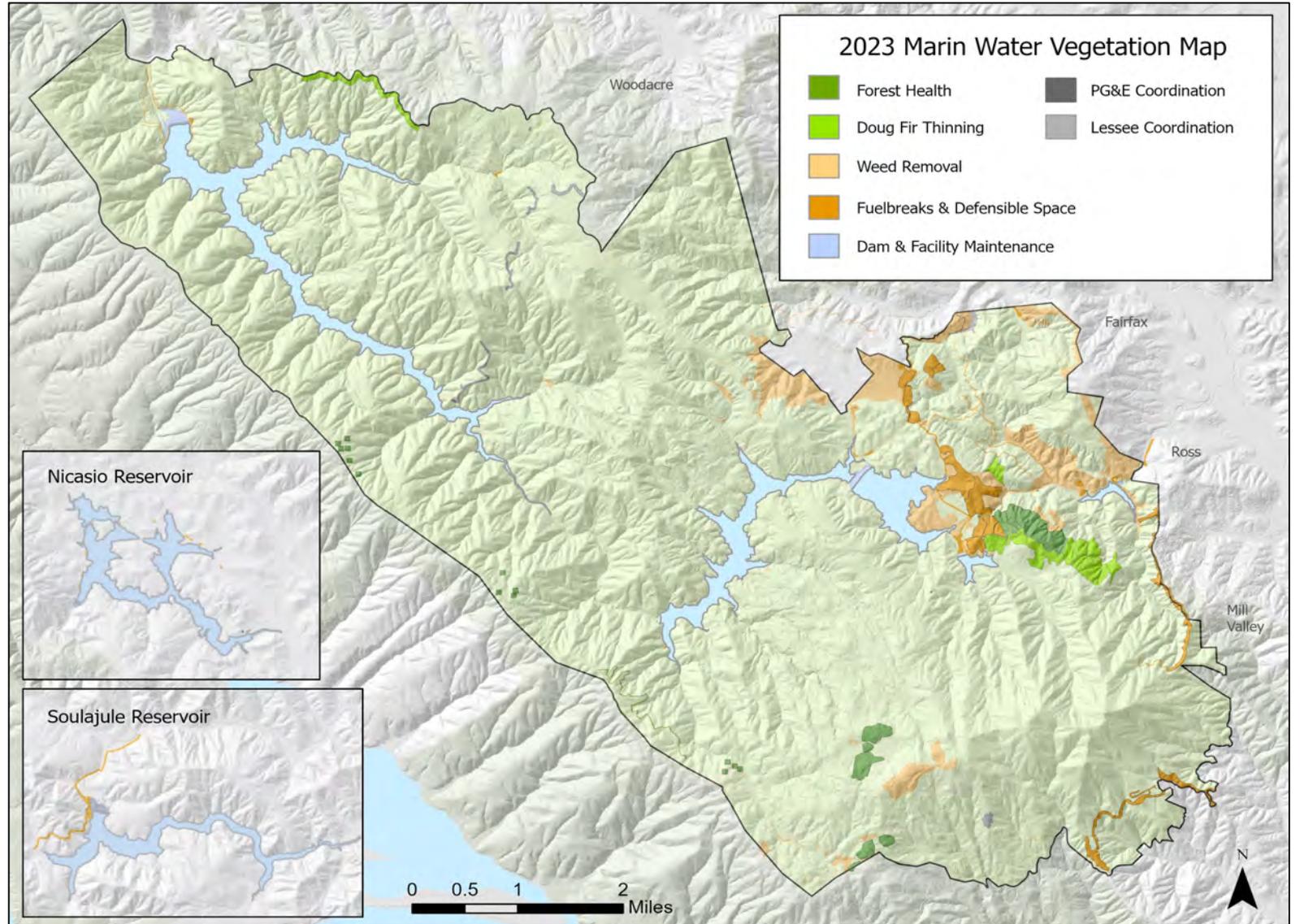
Management Actions

- Monitoring, Inventorying, and Planning
- Vegetation Management Actions
- Annual Reporting

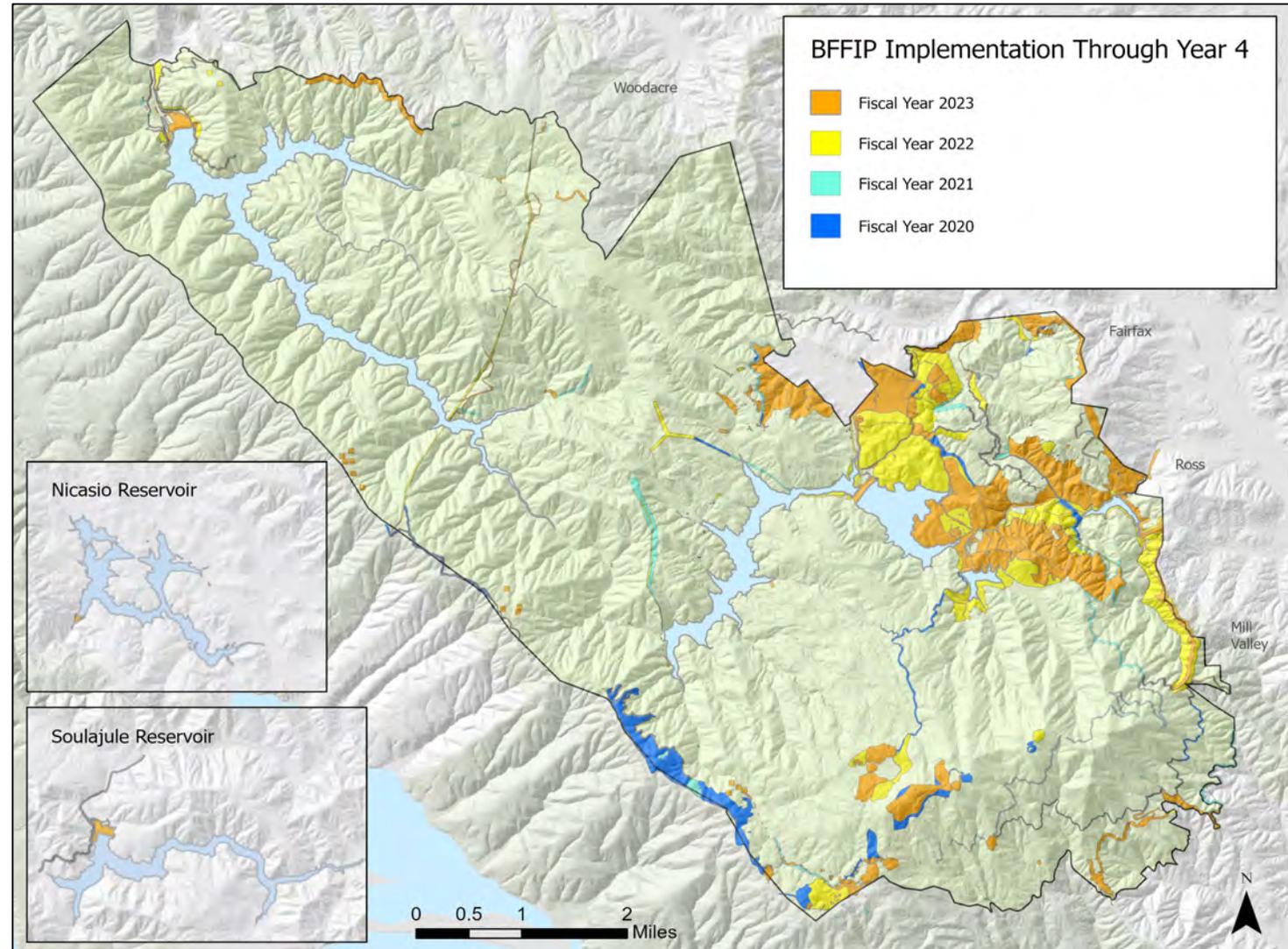
Vegetation Management Areas

BFFIP Year 4

Target: 1,495 acres
Implemented: 1,528 acres



BFFIP Implementation Years 1-4



Coordination and Planning

Red Flag Warnings

- Coordinated with County Fire, and State Parks
- Zero Red Flag Days

County Fire Coordination

- Prescribed fire planning
- Participated in Fire Safe Marin
- Marin Wildfire Prevention Authority-Technical Advisory Committee
- Supported County Fire Sawyer training

Coordination with PG&E

- Tracked and permitted PG&E's operations on MMWD watershed lands
- PG&E managed vegetation along 2.5 miles within 12.5 acres of land under power lines

Coordination with Lessees

- Coordinated defensible space work with leased properties
- Annual defensible space letter to neighboring properties



Monitoring and Inventories

Osprey Monitoring

- Completed annual monitoring at Kent Lake
- 8 occupied and 6 active osprey nests
- One active bald eagle nest

Resilient Forest Pilot Study Monitoring

- 45 acres of forest monitoring

Yellow Legged Frog Monitoring

- Completed annual monitoring activities
- 27 egg masses in Little and Big Carson Creeks
- 174 adults, 121 juveniles and 949 tadpoles observed

Non-Native Invasive Plant Mapping

- Expanded EDDR in recently treated areas
- 66 miles of roads and trails surveyed
- 186 patches on invasive weeds identified

Rare Plant Mapping

- Pre-project rare plant surveys over 411 acres
- Updated GIS records

Forest Pest & Pathogens

- Implemented BMPs during forestry work

Environmental Compliance

Crew Trainings

- Completed crew and contractors pre-project trainings

Pre Project Hydrology, Geology, Biology and Cultural Evaluations

- Completed pre-project assessments to facilitate avoidance measures

Northern Spotted Owl Surveys

- Completed annual monitoring of nesting sites on the watershed

Pre-Vegetation Management Nesting Bird Surveys

- Completed nesting surveys at vegetation management sites

Roosting Bat Surveys

- Completed bat surveys ahead of forest restoration work

Rare Plant Compliance Surveys

- Completed rare plant surveys ahead of new vegetation management work

Fuelbreak Maintenance

Fuelbreaks are strategically located blocks or strips of land where vegetation has been altered so that it has a low fuel volume and/or reduced flammability. Maintenance work is intended to maintain reduced fuel loads and improve stand structure to slow fire spread and reduce flame lengths.

Outcome	Cost
189 Acres	\$500,012



Fuelbreak Maintenance near Throckmorton FS



Fuelbreak Maintenance along Indian Crown FR

Defensible Space and Fine Fuel Reduction

Managing vegetation in the most risk-prone areas, including parking lots, picnic areas, and defensible space around structures is a top priority.

Outcome	Cost
45 Acres	\$37,260



Fine fuel Reduction at Nicasio Reservoir

Broom Management in Fuelbreaks

Management of broom in fuelbreaks in areas that are not fully surrounded by dense stands of broom. Focus of management is in the optimized and transitional fuelbreaks.

Outcome	Cost
253 Acres	\$140,460



French broom removal within the Indian/Crown Fuelbreak



French broom removal below Bon Tempe Treatment Plant

Roadside Mowing (Non-Fuelbreak)

The district conducts roadside mowing on an as-needed basis to maintain unobstructed access for district vehicles and a clear line of sight for both district staff and recreationists.

Outcome	Cost
47 Acres	\$54,598



Roadside Mowing at Old RR Grade Before



Roadside Mowing at Old RR Grade After

Dam Maintenance

Vegetation management on dams is necessary to ensure the integrity of the infrastructure. The district conducts dam maintenance on an as-needed basis to meet regulatory requirements for earthen dams.



Maintenance at Nicasio

Outcome	Cost
43 Acres	\$49,740



Peters Dam Maintenance

New Fuelbreak Construction

The district constructed new fuelbreaks by expanding existing fuelbreaks along the Fern Canyon Fuelbreak.

Outcome	Cost
10 Acres	\$76,198



Fern Canyon Fuelbreak Expansion



Taylor Trail Fuelbreak Construction

Early Detection Rapid Response

Includes regular surveys of parts of the watershed where weed invasion is most likely. Staff pull, cut, or dig out newly discovered invasions that area less than 100 square meters (0.02) in size; larger populations are flagged for later treatment by the district using watershed aides or contractors.

Outcome	Cost
66 miles of roads and trails surveyed	One Tam Contribution
186 Patches of Priority Weeds Treated	One Tam Contribution
135 new invasive weed populations identified	One Tam Contribution



Cape Ivy (*Delawarea odorata*)

Forest Restoration & Fuel Reduction

The district reduced accumulated fuels and brush density in conifer and mixed hardwood forest to reduce wildfire risk and improve overall forest function.

Description	Outcome	Cost
Continued forest restoration near BTPP and Pilot Knob	62 Acres	\$765,170
Maintained forest sites	68 Acres	\$64,787



Lake Lagunitas Forest Restoration Before



Lake Lagunitas Forest Restoration After



Potrero Meadow Project Maintenance

Reduce Encroachment in Oak Woodlands & Grasslands

The district conducts thinning of Douglas-firs and coyote brush to improve grassland and oak woodland habitat. The district also conducts follow maintenance at previously treated sites.

Outcome	Cost
150 Acres	\$908,368



Selective thinning of Douglas fir near Sky Oaks



Lakeview Meadow Before



Lakeview Meadow After

Broom Removal Outside of Fuelbreaks

Broom management is carried out in priority areas to protect the rich assemblage of native species and communities that provide both habitat and migration corridors.

Activity	Outcome	Cost
Initial Broom Removal	260 Acres	\$442,258
Broom Maintenance	198 Acres	\$111,342



Pine Point Before Broom Removal



Pine Point After Broom Removal



Sky Oaks Meadow After Multiple Years of Broom Maintenance

Management of Other Priority Non-Natives

The district works to manage or eliminate high priority weeds early, which reduces their spread across the watershed, reduces long-term maintenance costs, and enhances biodiversity.



Barbed goat grass (*Aegilops triuncialis*) at Pine Mt. Fire Rd.



Yellow Starthistle near Cataract Trail

Outcome	Cost
10.4 Acres of Goat Grass removed	\$16,770
143 Acres of Yellow Star thistle	\$33,128
36 Acres of Other Priority Weeds	\$42,312

Experimental Weed Treatment

- Grazing trials near Deer Park and Ross Reservoir
- Evaluate effectiveness of grazing at managing mature stands of French broom
- Mixed outcomes with broom management and cost efficiencies
- Positive public feedback

Outcome	Cost
31.4 Acres	\$27,080



Grazing Trail at Meerna Fuelbreak

Vegetation Management Costs/Acre

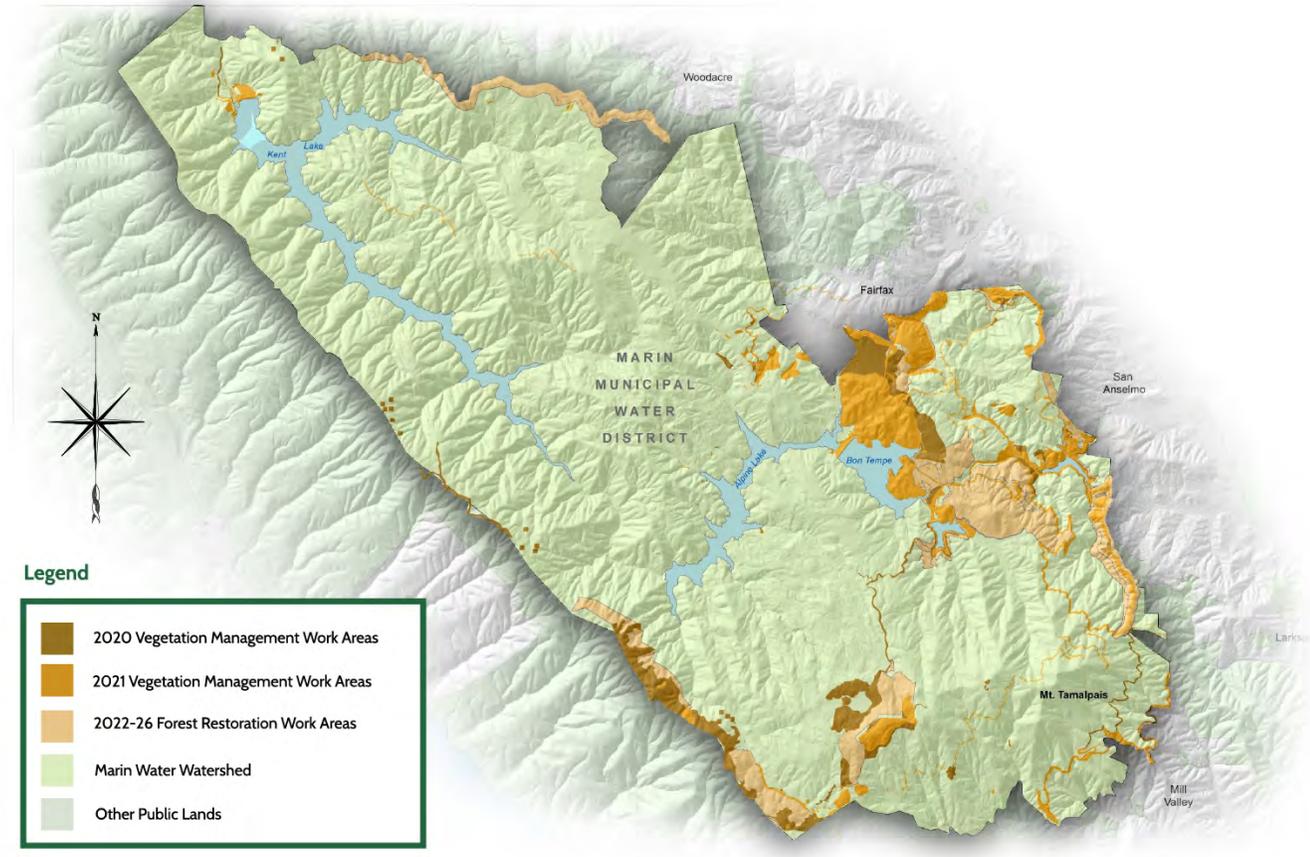
Management Action	Description	Cost/Acre
MA-20.1	Maintain fuel breaks	\$2,641
MA-20.2	Mow fine fuels	\$824
MA-20.3	Remove broom from fuelbreaks	\$556
MA-20.4	Roadside mowing (non-break)	\$1,151
MA-20.5	Dam maintenance	\$1,151
MA-21	Construct new fuelbreak	\$7,663
MA-23.1	Initial Forest Fuel Reduction	\$12,249
MA-23.2	Maintenance of forest fuels	\$953
MA-24.1	Reduce fir encroachment in grasslands and oak woodlands	\$6,060
MA-24.3	Remove broom in grasslands and oak woodlands*	\$953
MA-24.4	Broom maintenance in grasslands and oak woodlands	\$563
MA-24.5	Reduce goatgrass	\$1,611
MA-24.6	Reduce yellow starthistle	\$231
MA-24.7	Control Other Priority Weeds	\$1,181
MA-27	Experimental Weed Treatment (Grazing)	\$862
Total Vegetation Treatment Costs/Acre		\$2,149
Total Compliance Costs		\$467,787
Combined Veg & Compliance Cost/Acre		\$2,455

BFFIP FY 2023 Cost Summary

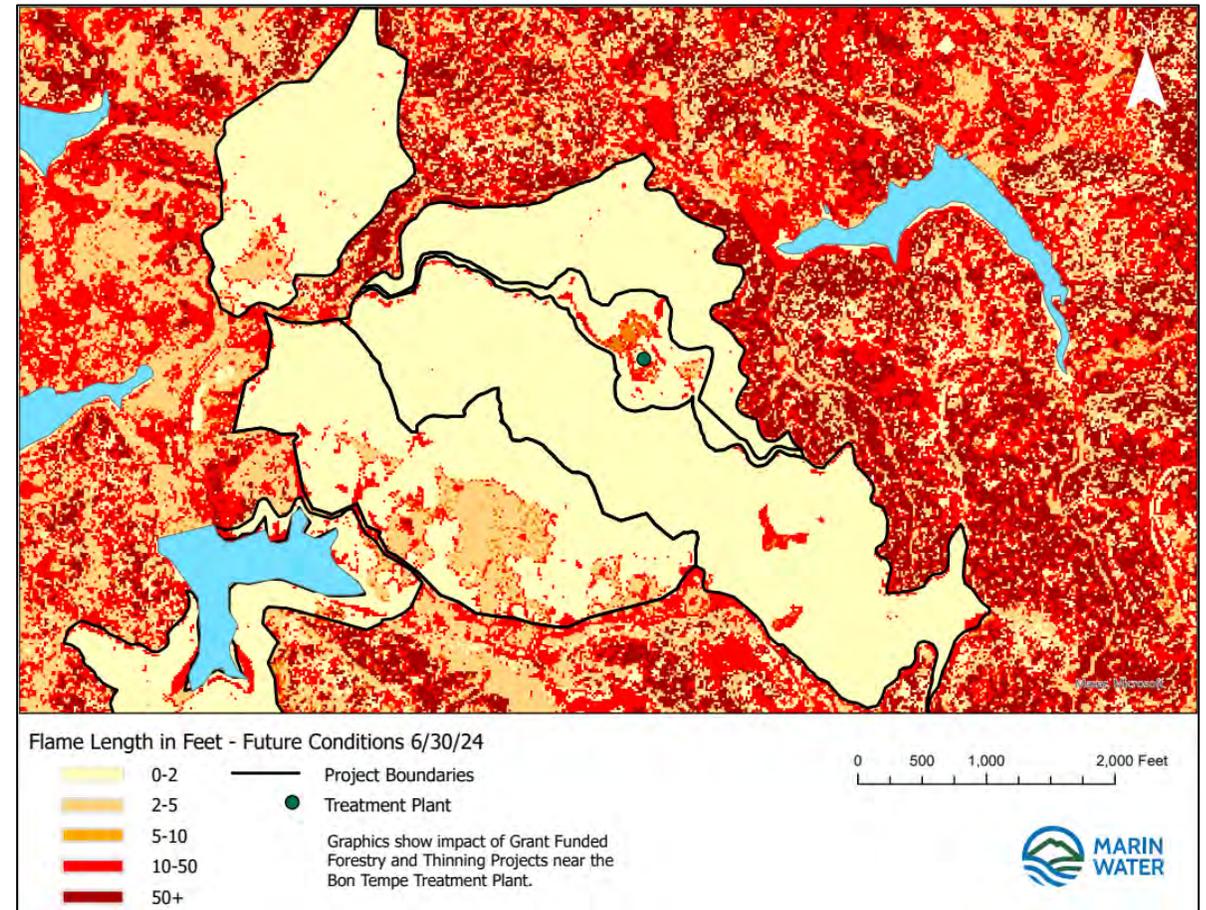
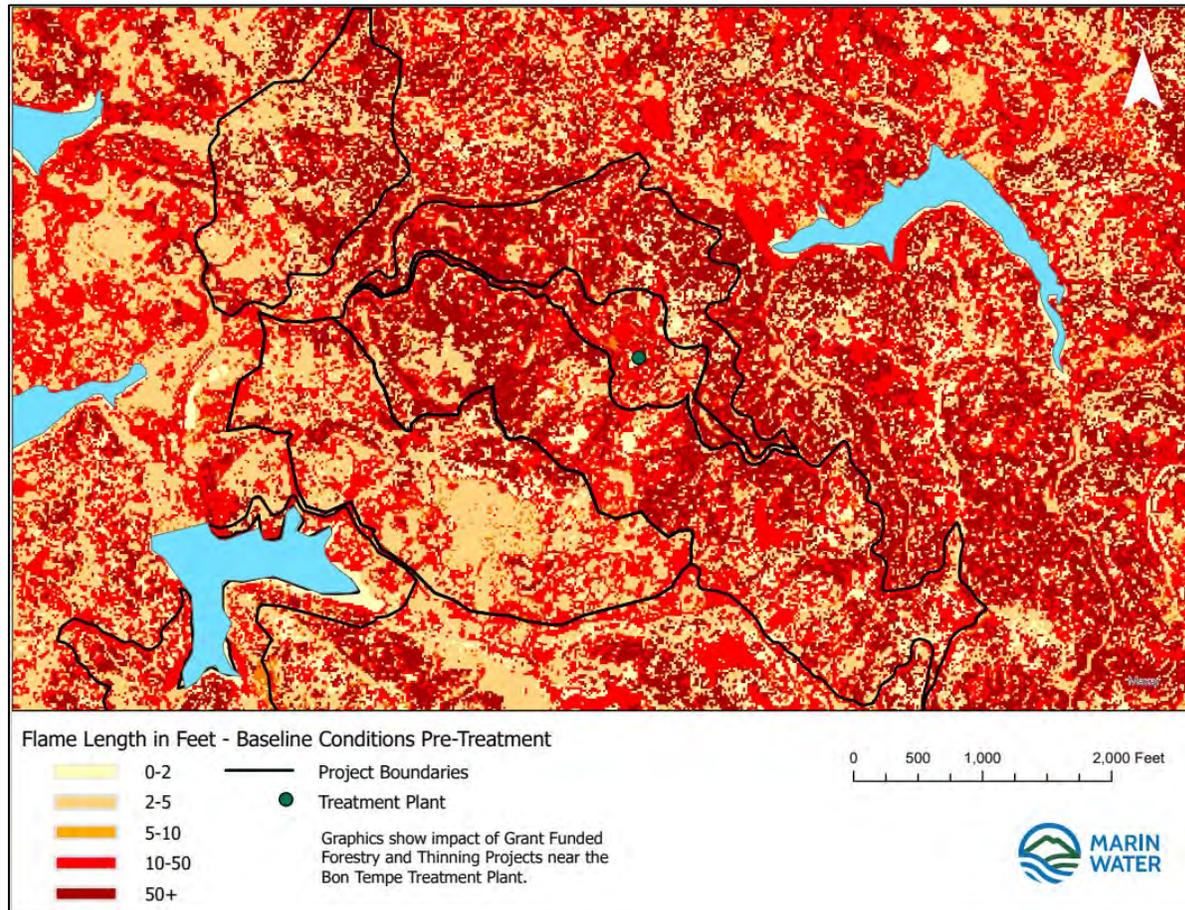
Summary of Completed Work	BFFIP Year 4 Estimate	FY23 Actual Costs
Community Coordination for Fire Risk Reduction	\$4,200	\$14,380
Planning, Compliance & Monitoring	\$242,200	\$467,787
Vegetation Management	\$2,543,500	\$3,270,328
Total	\$2,789,900	\$3,752,495

Adaptive Management & FY 2024 Work Plan

- Use fire behavior modeling results to inform future work
- Collaborate with implementing the One Tam Regional Forest Health Strategy
- Compliance costs will continue to increase as treatment acres increase
- Maintenance costs of treated areas will continue to increase
- Inventories will need to be prioritized based on funding availability
- Implement 2023 BFFIP Addendum
- Coordinate additional fuels work with Marin Wildfire Prevention Authority and One Tam Partners



Watershed Fire Modeling of BFFIP Work



Planning and Monitoring

- Continue forest pest and pathogen inventory.
- Continue collaborating with One Tam on Regional Forest Health Strategy.
- Collaborate with Marin Wildfire Prevention Authority on the Technical Advisory Committee.
- Continue mapping and treating non-native invasive plants.
- Continue to develop forestry restoration outreach materials to educate watershed users of the multi-benefit forestry restoration work underway.
- Continue Prescribed fire planning with MCF and BAAQMD, as well as with FIGR for additional cultural resource surveys.

BFFIP Y5 Vegetation Management

- Complete BFFIP Year 5 vegetation management plan.
- Per the BFFIP Addendum approved in FY23, Year 5 acre thresholds were modified as follows:
 - Forest Fuel Reduction increased from 60 to 100 acres.
 - Forest Fuel Maintenance increased from 100 to 300 acres.
 - All 3 Broom related Management Actions were combined for a total of 765 acres.
- Continue fuel break expansion at Sky Oaks / Taylor Trail areas.
- Complete remaining acres of forest restoration work around Potrero Meadow and San Geronimo Ridge for the Cal Fire Forest Health Grant.
- Focus new Broom work around Ross Reservoir and Shaver Grade.
- Implement one or more prescribed burns.
- Scale up forestry restoration work in accordance with BFFIP.
- Continue management of invasive weeds.