**Posting Date:** 06-09-2023

# NOTICE OF MEETING

# WATERSHED COMMITTEE/BOARD OF DIRECTORS (WATERSHED)

**(Per paragraph 3 on page 10 under subsection *Committee Meetings* of the Board Handbook:** The Board, as a practice, generally does not take final action on items during committee meetings, unless District staff determines the urgency of the item requires immediate action that cannot be delayed until a subsequent regular bi-monthly Board meeting.**)**

**MEETING DATE:** June 15, 2023

**TIME:** 1:30 p.m.

**LOCATIONS:** This meeting will be held remotely and in-person.
(Director Jed Smith will be participating remotely at another location.)

| **Open Session** | **Outside Location for Director Smith** | **Remotely** |
|---|---|---|
| Marin Water<br>Board Room<br>220 Nellen Avenue<br>Corte Madera, CA 94925 | 103 Herring Pond Road<br>Plymouth, MA 02360 | **URL:**<br>https://us06web.zoom.us/j/89367727671<br><br>**Webinar ID:** 893 6772 7671<br>**Phone Call:** 1-669-444-9171 |

**EMAILED PUBLIC COMMENTS:** Submit your comments in advance of the meeting to BoardComment@MarinWater.org. All emailed comments received by 11:30 a.m. on the day of the meeting will be provided to the Board of Directors prior to the meeting. Please do not include personal information in your comment that you do not want published on our website such as phone numbers and home addresses.

**PARTICIPATION DURING THE MEETING:**
***In-person Attendee:*** Fill out a speaker card prior and place it next to the Board Secretary. List the number of the agenda item(s), for which you would like to provide a comment. Once you're called, proceed to the lectern to make your comment.

***Remote Attendee:*** Click on the "raise hand" button on the bottom of the Zoom screen. If you are joining by phone and would like to comment, press *9 and staff will call on you by the last four digits of your phone number.

*(Note: The board president may shorten the amount of time for public comment due to large numbers of both in-person and virtual attendees.)*

| AGENDA ITEMS | RECOMMENDATIONS |
|---|---|
| **Call to Order and Roll Call*** | |
| **Adoption of Agenda** | *Approve* |
| **Public Comment - Items Not on the Agenda**<br><br>Members of the public may comment on any items not listed on the agenda during this time. Comments will be limited to three (3) minutes per speaker, and time limits may be reduced by the board president to accommodate the number of speakers and ensure that the meeting is conducted in an efficient manner. | |
| **Calendar** *(1:40 p.m. – Time Approximate)* | |
| 1. Minutes of the Watershed Committee Meeting/Special Meeting of the Board of Directors (Watershed) of March 16, 2023 *(Approximate Time 1 Minute)* | *Approve* |
| 2. Watershed Recreation Management Planning Update *(Approximate Time 25 Minutes)* | *Information* |
| 3. Recruitment and Hiring of Two (2) Watershed Protection Park Ranger Trainees for a Limited Duration of Up to Three Years *(Approximate Time 15 Minutes*) | *Review and Refer for Board Approval* |
| 4. Biodiversity, Fire, & Fuels Integrated Plan (BFFIP) Updates and Addendum to BFFIP Program Environmental Impact Report *(Approximate Time 20 Minutes*) | *Information* |
| 5. Lagunitas Creek Fisheries Monitoring and Tagging Update *(Approximate Time 15 Minutes)* | *Information* |
| **Adjournment** *(2:56 p.m. – Time Approximate)* | |

**ADA NOTICE AND HEARING IMPAIRED PROVISIONS:**
In accordance with the Americans with Disabilities Act (ADA) and California Law, it is Marin Water's policy to offer its public programs, services, and meetings in a manner that is readily accessible to everyone, including those with disabilities. If you are an individual with a disability and require a copy of a public hearing notice, an agenda, and/or agenda packet in an appropriate alternative format, or if you require other accommodations, please contact Board Secretary Terrie Gillen at 415.945.1448, at least two days in advance of the meeting. Advance notification will enable Marin Water to make reasonable arrangements to ensure accessibility.

***MARIN WATER BOARD OF DIRECTORS ORDER OF ROLL CALL:** RANJIV KHUSH, LARRY RUSSELL, JED SMITH, MONTY SCHMITT, AND MATT SAMSON

INFORMATION AGENDAS ARE AVAILABLE FOR REVIEW AT THE CIVIC CENTER LIBRARY, CORTE MADERA LIBRARY, FAIRFAX LIBRARY, MILL VALLEY LIBRARY, MARIN WATER OFFICE, AND ON THE MARIN WATER WEBSITE (MARINWATER.ORG)

**FUTURE BOARD AND COMMITTEE MEETINGS**

| Dates | Meetings |
|---|---|
| Friday, June 16, 2023<br>9:30 a.m. | • Operations Committee Meeting/Special Meeting of the Board of Directors (Operations)<br>- Closed Session regarding Labor immediately to follow |
| Tuesday, June 20, 2023<br>6:30 p.m. | • Board of Directors' Regular Bi-Monthly Meeting |
| Thursday, June 22, 2023<br>9:30 a.m. | • Finance & Administration Committee Meeting/Special Meeting of the Board of Directors (Finance & Administration) |

Board Secretary

***MARIN WATER BOARD OF DIRECTORS ORDER OF ROLL CALL:** RANJIV KHUSH, LARRY RUSSELL, JED SMITH, MONTY SCHMITT, AND MATT SAMSON

**Item Number:** 01
**Meeting Date:** 06-15-2023
**Meeting:** Watershed Committee/Board of Directors (Watershed)

# Approval Item

**TITLE**
Minutes of the Watershed Committee Meeting/Special Meeting of the Board of Directors (Watershed) of March 16, 2023

**RECOMMENDATION**
Approve the minutes

**SUMMARY**
On March 16, 2023, the Watershed Committee/Board of Directors (Watershed) held its quarterly meeting. The minutes of that meeting are attached.

**DISCUSSION**
None

**FISCAL IMPACT**
None

**ATTACHMENT(S)**
1. Minutes of March 16, 2023, Watershed Committee Meeting/Special Meeting of the Board of Directors (Watershed)

| DEPARTMENT OR DIVISION | DIVISION MANAGER | APPROVED |
|---|---|---|
| Communications & Public Affairs Department | Terrie Gillen<br>Board Secretary | Ben Horenstein<br>General Manager |

**MARIN MUNICIPAL WATER DISTRICT**
**WATERSHED COMMITTEE MEETING/SPECIAL MEETING OF THE**
**BOARD OF DIRECTORS (WATERSHED)**

**MINUTES**

**Thursday, March 16, 2023**

**Held Remotely and at In-Person Locations**

Marin Water Board Room, 220 Nellen Avenue, Corte Madera, CA 94925; and,
200 Martinique Avenue, Tiburon, CA 94920

**CALL TO ORDER AND ROLL CALL**

Chair Matt Samson called the meeting to order at 1:30 p.m.

***Directors Present:*** Ranjiv Khush, Larry Russell, Monty Schmitt, and Matt Samson

***Directors Absent:*** Jed Smith

**ADOPT AGENDA:**

On motion made by Vice Chair Schmitt and seconded by Director Khush, the board approved the adoption of the agenda by the following roll call vote:

| | |
|---|---|
| Ayes: | Directors Khush, Russell, Schmitt, and Samson |
| Noes: | None |
| Absent: | Director Smith |

**PUBLIC COMMENT:**

There were no public comments.

**CALENDAR ITEMS:**

**Item 1 Minutes of the Watershed Committee Meeting/Special Meeting of the Board of Directors (Watershed) Meeting of December 15, 2022**

On motion made by Vice Chair Schmitt and seconded by Director Khush, the board approved the minutes by the following roll call vote:

| | |
|---|---|
| Ayes: | Directors Khush, Russell, Schmitt, and Samson |
| Noes: | None |
| Absent: | Director Smith |

**Item 2 One Tam Forest Health Strategy Update**

Watershed Resources Manager Shaun Horne, with consultant Danny Franco of the Golden Gate National Parks Conservancy, provided a presentation on this item. Discussion ensued.

There were three (3) public comments.

This agenda item was an information item. The Board did not take any formal action.

**Item 3 Biodiversity, Fire & Fuels Integrated Plan & Wildfire Modeling Update**

Natural Resources Program Manager Carl Sanders presented this item. Discussion between the board and staff took place during and after the presentation.

There were seven (7) public comments.

This agenda item was an information item. The Board did not take any formal action.

**Item 4 Watershed Recreation Management Planning Update**

Watershed Resources Manager Horne and Consultant Brian Burchfield with Alta Planning + Design presented this item. Discussion followed.

There were six (6) public comments.

This was an informational item. The Board did not take any formal action.

**ADJOURNMENT**

There being no further business, the Watershed Committee Meeting/Special Meeting of the Board of Directors (Watershed) adjourned at 3:19 p.m.

_____

Board Secretary

**Item Number:** 02
**Meeting Date:** 06-15-2023
**Meeting:** Watershed Committee/Board of Directors (Watershed)

# 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 Recreation Management Planning Update


**SUMMARY**
The Main Municipal Water District (District) partnered with the Golden Gate National Parks Conservancy (GGNPC) to engage District Board members, executive leadership, stakeholders, and constituents in early scoping of a Watershed Recreation Management Plan (Plan). At the February 18, 2022 Board of Directors meeting, the Board approved a contract with Alta Planning to complete a Watershed Visitor Census Survey and develop of a Watershed Recreation Management Plan feasibility Study. Since June 2022, the District has hosted six (6) community workshops and two watershed (2) site visits to solicit input relating to watershed operations and visitor management. Staff will provide an update on the planning process and meetings held to date and provide a brief summary of the 2022 Watershed Visitor Census.


**DISCUSSION**
Mt. Tamalpais and its adjacent watersheds support a rich array of plants and animals, panoramic vistas, and recreational opportunities that are treasured by residents and visitors alike. Since before the turn of the last century, Mt. Tamalpais has been a magnet for recreationists. The Marin Municipal Water District's Mt. Tamalpais watershed lands receive approximately 1.8 million visitors annually (MMWD 2013) and are part of the Golden Gate Biosphere Reserve (UNESCO 2002). Watershed users include anglers, hikers, equestrians, nature viewers, runners, walkers, youth camps, cyclists and many more. With the onset of the COVID-19 Pandemic and associated Shelter in Place Orders the number of watershed visitors drastically increased, overwhelming many of the District's facilities (restrooms, parking lots, trash receptacles and popular trails). This dramatic increase in users demonstrates the significant value of natural areas and open space lands to the community and the community's deep connection to these areas. However, this increase in visitors also accentuated long-standing watershed issues and ongoing conflicts between different visitor groups.

Currently, the District has two overarching management plans for the watershed: the Roads and Trails Management Plan (RTMP) and the Biodiversity, Fires, and Fuels Integrated Plan (BFFIP). The primary goals and objectives of the RTMP are aimed at the protection of water quality through the application of best management practices for roads and trails maintenance, while the BFFIP focuses on the actions that the District will implement to reduce fire hazards to protect water quality and maintain and enhance ecosystem function. Neither of these plans directly addresses recreational activities on the watershed. A Watershed Recreation Management Plan feasibility study will evaluate current watershed use patterns and opportunities to support safe, inclusive use with an emphasis on protecting the watershed's unique biodiversity, habitat, and water quality. The aim is to facilitate safe community access supported by appropriate regulations, facilities, partnerships, stewardship programs, and signage, which collectively will help protect the District watershed lands.

The planning process has been designed to facilitate a conversation with the community around existing visitation in an effort to help address long-standing issues around various modes of recreation on Mt. Tamalpais. The WRMP is a feasibility study that will identify various opportunities that could be pursued to address various recreation related issues that have been identified, and present a range of actions for future consideration and adoption by the Board. The WRMP will entail a review of existing watershed recreational facilities, stewardship and volunteer programs, visitor management strategies, and explore multi-benefit outcomes that can help to protect the unique goals of different watershed visitors and the biodiversity of the District's watershed lands.

**Visitor Census Data Analysis**

In development of the Recreation Management Plan, the District utilized data from a wide variety of sources in order to assess how visitors are interacting with the Watershed, gauge the quality of experiences and facilities, and assess total levels of usage compared to historical data. Watershed intercept surveys were carried out on the watershed to get direct input from daily visitors to evaluate overall visitation and user experience. The intercept surveys provided a direct comparison to the 2012/13 Watershed Visitor Census Survey data. The District installed nine (9) Eco-Counters at popular trails and fire roads to gather visitor counts. StravaMetro was used to evaluate patterns of trail and fire road use and to help identify the proportional levels of visitation on the watershed. Streetlight Data provides anonymized cell phone GPS data to identity trends in transportation activities and was used to evaluate trends in watershed visitations at 16 major parking areas and bicycle/pedestrian activity in 5 pass through zones.

While the typical activities and patterns of use have remained relatively the same over the past ten years, the total levels of visitation across the District's watershed lands are estimated to have increased by approximately 27.5% to roughly 2.3 million visitors annually; total estimated range of usage is from 1,984,196 to 2,645,947. Despite this increase, visitors continue to rank their experience as 'good' or 'great' and 91% of respondents stated that they feel safe, 8% of respondents did not answer and 1% said they felt unsafe while on the watershed. In 2022, 84%

or in person respondents stated that they had great or good interactions with other visitors and 1% stated they had a poor experience. In 2022, 87% of in person respondents stated that trail conditions are “Great” or “Good”, which is down from 90% in 2012. In 2012, the experience with the highest portion of “Poor” votes (8%) was restrooms, which improved to 5% in 2022. In 2022, the experience with the highest portion of “Poor” votes (6%) was parking, which decreased from 7% in 2012.The data analysis highlights that visitation is highest on the weekends and is primarily focused in the southeastern portion for both bikers and hikers.

**Watershed Recreation Management Planning Feasibility Study**
It is anticipated that the WRMP will identify many outcomes relating to trail maintenance, restoration, and stewardship, which align with the current Watershed Roads and Trails Management Plan. Other identified outcomes may require longer-term efforts and additional environmental review prior to adoption and implementation. The draft document is expected to be ready in the fall of 2023. The District has developed a webpage to keep the community updated on the planning process which may be viewed at the following webpage (https://www.marinwater.org/WatershedRecPlan).

Staff will provide an overview of the public meetings and provide an update on next steps in the planning process, including a general timeline for completion of the WRMP.

**FISCAL IMPACT**
None

**ATTACHMENT(S)**
1. Watershed Visitor Census Survey Data Analysis

**Item Number:** 03
**Meeting Date:** 06-15-2023
**Meeting:** Watershed Committee/Board of Directors (Watershed)

# Review and Refer for Board Approval

**TO:** Watershed Committee/Board of Directors (Watershed)

**FROM:** Don Wick, Chief Ranger DW
Shaun Horne, Watershed Resources Manager

**THROUGH:** Ben Horenstein, General Manager

**DIVISION NAME:** Watershed Protection

**ITEM:** Ranger Trainee Position

## RECOMMENDATION

Authorize the General Manager to recruit and hire two (2) Watershed Protection Park Ranger Trainees – Limited Duration – for a period of up to three years

## SUMMARY

On an annual basis, the District submits a request to fill temporary, seasonal Watershed Ranger Aide position to assist full-time staff with limited Ranger and maintenance duties on watershed lands. Staff determined that it would be more efficient to hire two (2) Park Ranger Trainees and retain them for a longer work period of up to three (3) years. The two benefited, limited duration, Ranger Trainee positions being proposed would replace three (3) non-benefited, seasonal Watershed Ranger Aide hires that are traditionally hired for six months in duration. This new model will provide for more knowledge retention among staff and will reduce the needed onboarding, hiring and training resources associated with hiring a larger number of temporary Watershed Aides for shorter periods. In addition, it would provide for succession planning given that the trainee positions have fewer requirements than a full ranger position, but could eventually grow into that role. This will likely also provide for an opportunity for a more diverse applicant pool. This model will support opportunities for the Ranger department to support non-traditional candidates and help expose early career professionals to Ranger career paths.

## DISCUSSION

Staff reviewed a longstanding seasonal employee staffing model for the Watershed Ranger Department and determined that the creation of a new job classification hired for longer durations than existing temporary aide positions would provide for more efficiency, improve departmental succession planning, and support recruitment of non-traditional candidates. The Ranger Trainee Program is being advanced to add capacity to the Ranger Department and free

up valuable Ranger staff time to focus on enforcement and public safety, as this model would reduce the number of overall training hours for existing staff. These temporary Ranger Trainees will play a key role in assisting staff with the maintenance and restoration of watershed lands, maintaining watershed roads and trails, supporting visitor outreach, constructing or maintaining fuel breaks, assisting with sanitation and cleanliness of visitor areas, and supporting volunteer trail work. The longer work period, of up to three (3) years, benefits the District because it allows the Ranger Trainees to develop a deeper knowledge base of the work performed by Rangers, interaction with visitors and involvement with watershed projects.

In 2022, the District recruited for two vacant Ranger positions and observed a limited number of candidates with the required certifications. In part this is due to the high level of training required for a Park Ranger position. Additionally, people with the required certifications tend to seek employment with law enforcement and fire agencies. It is also well understood that the required certifications are a barrier for many community members and non-traditional candidates. In the past, the District has relied on seasonal employees to add capacity to the Ranger Department. Seasonal Watershed Aides require a significant level of training before they are able to work independently. The cycle of repetitive training every six months reduces the Ranger's field time and the knowledge gained by the Watershed Aides is lost after the position terms out.

**Park Ranger Trainee Program**

A goal of the Park Ranger Trainee program is to lower the training requirements for entry into the Ranger Department and more broadly the Ranger career field in an effort to provide opportunities to non-traditional candidates and to support career development through training. Park Ranger Trainees will not be required to have all the standard Ranger certifications, which includes a Basic Law Enforcement Course Certificate of Completion issued by the California Commission on Peace Officer Standards and Training (P.O.S.T.), Firefighter Type 2 Certification, and Emergency Medical Technician training. This means their functional role in the Ranger Department will be slightly different than the responsibilities of the District's Ranger I and II Positions. Training and associated duties will be designed to develop the skill sets of the Park Ranger in each trainee to help them prepare for a Park Ranger I or II position. In an effort to support career development, the District will support the Park Ranger Trainee, working with them to become Firefighter Type 2 Certified within 1 year of employment. The trainees will also attend trainings to gain skills in public safety first aid and wilderness first aide, search and rescue, natural resources interpretation and chainsaw training. If a Ranger I or II position opens up during the Park Ranger Trainee three-year term and the trainee is successful in advancing, the District will support their participation in Basic Law Enforcement Course Certificate of Completion issued by the California Commission on Peace Officer Standards and Training (P.O.S.T.) within the first year of employment. This model will help the District with succession planning while also adding capacity to the Ranger Department in the near term.

**FISCAL IMPACT**

The Ranger Department budgets for three (3) Watershed Ranger Aides in the Operations budget. One of the Park Ranger Trainee positions will be funded by not filling the watershed aide positions. The second Park Ranger Trainee is budgeted in the proposed FY 2024 budget. Salary and benefits for the Park Ranger Trainee would range from $87,000 to $105,524.

**ATTACHMENT(S)**

None

**Item Number:** 04
**Meeting Date:** 06-15-2023
**Meeting:** Watershed Committee/Board of Directors (Watershed)

# Review and Refer for Board Approval

**TO:** Watershed Committee/Board of Directors (Watershed)

**FROM:** Carl Sanders, Natural Resources Manager
Shaun Horne, Watershed Resources Manager

**THROUGH:** Ben Horenstein, General Manager

**DIVISION NAME:** Watershed

**ITEM:** Biodiversity, Fire, & Fuels Integrated Plan Updates and Addendum to the Biodiversity, Fire, and Fuels Integrated Plan Program Environmental Impact Report


**SUMMARY**
In October of 2019, the District adopted the Biodiversity, Fire, and Fuels Integrated Plan (BFFIP), drafted by Panorama Environmental Inc., which describes the actions the District will implement to reduce wildfire hazards and to maintain and enhance ecosystem function on the District's watershed lands. To better understand the potential risks to critical facilities, neighboring communities and the efficacy of existing and proposed fuel reduction efforts, the District brought on Tukeman Geospatial to conduct fire behavior modeling work. Modeling working combined with the One Tam *Forest Health Strategy* will inform updates to the Biodiversity Fires, and Fuels Integrated Plan in 2023/2024 as part of ongoing adaptive management. The Addendum to the BIFFIP Program Environmental Impact Report reviewed and analyzed the proposed updates to the Biodiversity Fires, and Fuels Integrated Plan in 2023/2024, in compliance with the California Environmental Quality Act to assure that they within the scope of the BIFFIP Program EIR.

Staff is requesting that the Watershed Committee review and refer adoption of the BFFIP updates and Addendum at a future regularly scheduled Board of Directors meeting.


**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 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. Under the BFFIP, there are 27 Management Actions that are being implemented to fulfill the goals and approaches 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.

Currently the District is in year four of BFFIP Implementation and is conducting over 1,400 acres of vegetation management work on an annual basis. The District presented the BFFIP Annual Report to the Watershed Committee on September 15, 2022. In the Annual Report the District identified a BFFIP update as part of the 2023 work plan. The District also identified the BFFIP update as a strategic priority during the Board Retreat on February 2, 2023. On October 20, 2022, Marin Water entered into contract (MA 6136) with Panorama Environmental Inc. to draft an update to the BFFIP, including a review in accordance with the California Environmental Quality Act (CEQA), which determined that an Addendum to the BIFFIP Program EIR is the appropriate level of review for the BIFFIP Update. On March 16, 2023, staff provided the Watershed Committee with an update on Watershed Wildfire Modeling work and progress on strategic updates to the BFFIP that would improve the efficiency and effectiveness of implementation. The BFFIP calls for periodic review as part of its adaptive management framework. In recent years, a limiting factor for grant funding has been the total acres of vegetation work that can occur each year under the BFFIP. With the completion of the *Forest Health Strategy*, it will be beneficial to increase the acreage of BFFIP forest restoration Management Actions to better align with funding sources and *Strategy* priorities.

Additionally, combining all broom management activities into one BFFIP Management Action, will streamline the District's broom management program. The Addendum and Appendix will refine and clarify a subset of BFFIP mitigation measures to better align with best practices and lessons learned. The Addendum has evaluated the environmental impacts relating to BIFFIP project changes, finding that no new or substantially more severe significant impacts will occur as a result of the revised BFFIP. No new substantial changes will occur with respect to the circumstances under which the revised BFFIP and BFFIP PEIR would be undertaken and therefore an addendum is the appropriate CEQA document for the BIFFIP updates.

**CEQA REVIEW**

The District's Board of Directors certified the Program Environmental Impact Report (PEIR) for the BFFIP (State Clearinghouse Number 2017012007) on October 15, 2019 (Marin Water District, 2019). The BFFIP PEIR was prepared in accordance with the California Environmental Quality Act (CEQA) to assess the environmental effects of the BFFIP. The mitigation measures (MMs) adopted as part of the BFFIP PEIR are presented in Appendix A. The Notice of Determination for the BFFIP PEIR was posted on October 28, 2022.

Aspects of the BFFIP are proposed to be revised from what was analyzed in the certified PEIR. Pursuant to Section 15164 of the CEQA guidelines, an addendum to an adopted EIR shall be prepared if only minor technical changes or additions are necessary and none of the conditions

described in Sections 15162 and 15163 of the CEQA Guidelines have occurred that call for preparation of a subsequent or supplemental EIR. As described in Section 15162(a), a subsequent or supplemental EIR would be required if substantial changes occur to the project or substantial changes to the circumstances under which the project is undertaken occur that would involve either (a) a new significant environmental effect or (b) a substantial increase in the severity of a previously identified significant effect.

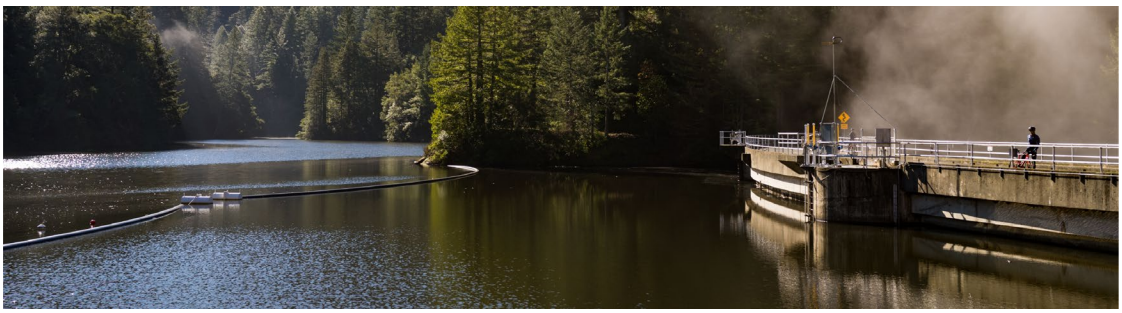
This addendum describes the changes and additions to the BFFIP and BFFIP PEIR (referred to as the "revised BFFIP" and "revised BFFIP PEIR", respectively), and identifies any additional analysis in accordance with the Appendix G resource questions analyzed in the BFFIP PEIR. This addendum finds that the revisions to the BFFIP and BFFIP PEIR would not result in new significant impacts, nor would the revisions substantially increase the severity of previously identified significant impacts (CEQA Guidelines Section 15162), concluding that an addendum is the appropriate approach to document the changes since certification of the BFFIP PEIR. No new information of substantial importance has been identified, and none of the conditions described in Sections 15162 and 15163 of the CEQA Guidelines that call for preparation of a subsequent CEQA document are present.

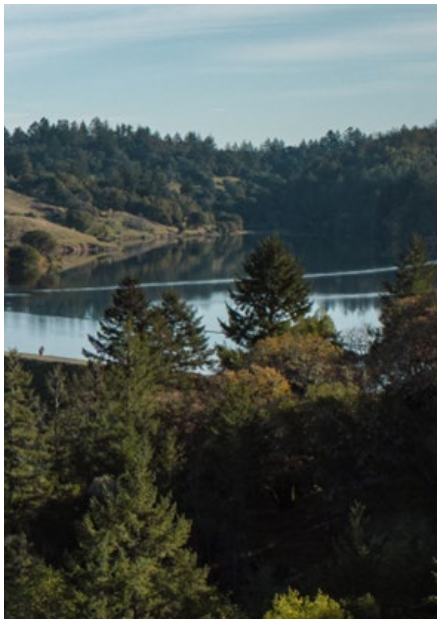
Section 15164(c) of the CEQA Guidelines states that "[a]n addendum need not be circulated for public review but can be included in or attached to the final EIR or adopted negative declaration." Because the impact determinations in the Final EIR for the BFFIP have not changed, additional circulation and review of public comments are not required.

**FISCAL IMPACT**
None

**ATTACHMENT(S)**

1. Biodiversity, Fire, and Fuels Integrated Plan (BFFIP) Addendum and Appendix



Marin Municipal Water District

# Addendum to the Biodiversity, Fire, and Fuels Integrated Plan (BFFIP) Program Environmental Impact Report

State Clearinghouse No. 2017012007

**May 2023**

717 Market Street, Suite 400
San Francisco, CA 94103
650-373-1200
www.panoramaenv.com

PANORAMA ENVIRONMENTAL, INC.

# Table of Contents

## List of Appendices

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# 1 Introduction

## 1.1 Background

The Marin Municipal Water District (District) was chartered on April 25, 1912, and was the first municipal water district in California. Prior to that, water in the central and southern Marin was provided by several small, private companies, and many of them were subsidiaries to local real estate developers. Recognizing the critical importance of reliable water service, the Marin Municipal Water District was formed. The District's mission is to manage natural resources in a sustainable manner, and to provide high-quality water at a reasonable price. As of 2022, the District serves more than 191,000 people in central and southern Marin and is an environmental steward to 22,000 acres of watershed land on Mt. Tamalpais and in West Marin.

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, 27 management actions are implemented to fulfill the goals and the approach that is 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. As of March 2023, the District is in year four of the BFFIP implementation and is conducting over 1,400 acres of vegetation management work on an annual basis.

## 1.2 CEQA Compliance

The District's Board of Directors certified the Program Environmental Impact Report (PEIR) for the BFFIP (State Clearinghouse Number 2017012007) on October 15, 2019 (Marin Water District, 2019). The BFFIP PEIR was prepared in accordance with the California Environmental Quality Act (CEQA) to assess the environmental effects of the BFFIP. The mitigation measures (MMs) adopted as part of the BFFIP PEIR are presented in Appendix A. The Notice of Determination for the BFFIP PEIR was posted on October 28, 2022.

Aspects of the BFFIP are proposed to be revised from what was analyzed in the certified PEIR. Pursuant to Section 15164 of the CEQA guidelines, an addendum to an adopted EIR shall be prepared if only minor technical changes or additions are necessary and none of the conditions described in Sections 15162 and 15163 of the CEQA Guidelines have occurred that call for preparation of a subsequent or supplemental EIR. As described in Section 15162(a), a subsequent or supplemental EIR would be required if substantial changes occur to the project

or substantial changes to the circumstances under which the project is undertaken occur that would involve either (a) a new significant environmental effect or (b) a substantial increase in the severity of a previously identified significant effect.

This addendum describes the changes and additions to the BFFIP and BFFIP PEIR (referred to as the "revised BFFIP" and "revised BFFIP PEIR", respectively), and identifies any additional analysis in accordance with the Appendix G resource questions analyzed in the BFFIP PEIR. This addendum finds that the revisions to the BFFIP and BFFIP PEIR would not result in new significant impacts, nor would the revisions substantially increase the severity of previously identified significant impacts (CEQA Guidelines Section 15162), concluding that an addendum is the appropriate approach to document the changes since certification of the BFFIP PEIR. No new information of substantial importance has been identified, and none of the conditions described in Sections 15162 and 15163 of the CEQA Guidelines that call for preparation of a subsequent CEQA document are present.

Section 15164(c) of the CEQA Guidelines states that "[a]n addendum need not be circulated for public review but can be included in or attached to the final EIR or adopted negative declaration." Because the impact determinations in the Final EIR for the BFFIP have not changed, additional circulation and review of public comments are not required.

# 2 Description of the Revised BFFIP

## 2.1 Introduction

The BFFIP calls for periodic review as part of its adaptive management framework. A limiting factor for grant funding in recent years has been the total acres of vegetation work that can occur in a single year under the BFFIP, where projects with greater acres treated tend to receive preference for funding. As the *Marin Regional Forest Health Strategy*[1] is finalized through a collaborative effort of the One Tam partnership[2], the District would like to increase the number of acres for forest restoration and maintenance activities identified in the BFFIP. Combining all broom management activities into one management activity will also help streamline the District's broom management program. Other revisions include updates to mitigation measures related to special status plant species, as well as trails management and air pollution protection related to prescribed burning. Clarifying language has been added to the BFFIP as well as the BFFIP PEIR mitigation measures to account for these proposed revisions.

Proposed revisions to the BFFIP were made to sections 4.2.2, 6.2.1, 6.2.4, 6.2.5, and 6.3.3, as well as Table 6-1. Proposed revisions have also been made to MM Air-3: Minimization of Air Pollutant Risk, MM Biology-2: Protection of Special-Status Plants, and MM Hazards-5: Roads and Trails around Broadcast Burns in conjunction with the changes to the BFFIP. The proposed revisions to the adopted BFFIP and certified BFFIP PEIR are displayed in the following sections in ~~strikeout~~ and underline.

## 2.2 Revised BFFIP

### 2.2.1 Purpose of Revisions

The revisions to the BFFIP and the reasons for the changes include:

[1] The Marin Regional Forest Health Strategy will provide a series of informed treatment methods to improve the ecology of the Marin forests. The approaches will improve forest habitat and protect biodiversity, while also strategically managing vegetation to reduce fire fuels such as dry brush and diseased or dying trees.

[2] The One Tam partnership was established in 2014 to provide a platform to work collaboratively for the benefit of the community and environment. Collaborators include the California State Parks, Marin County Parks, Golden Gate National Parks Conservancy, the National Park Service, and the Marin Municipal Water District.

- **Allowing beneficial treatments, including prescribed burning, in areas of sensitive resources, namely rare plants.** Clarifications have been made to clearly state that certain methods of treatment, including prescribed burning, are allowable in areas of rare plants if the treatments can be shown to benefit the species and not have an adverse effect. The purpose of these revisions is to clarify that rare plant avoidance pertains to adverse effects and beneficial treatments can be implemented to meet plan goals. Minor changes to mitigation in relation to the clarifications presented in the BFFIP are shown in Section 2.3.
- **Combining broom treatments into one management action and increasing year 5 to the maximum.** Combining all broom treatment into MA-20 instead of separating it into Infrastructure Zone (fuelbreak) acreages in MA-20 and Ecosystem Restoration Zone acreages in MA-24 will allow for better management and tracking of broom removal, and will also allow for distributing the total acreage among fuelbreaks and other areas in the watershed as needed to optimize broom removal each year. Increasing to the maximum in year 5 allows for a greater level of treatment in year 5 than was originally planned, which is now feasible given funding opportunities.
- **Increasing the acreages treated to improve conifer and mixed hardwood forest stand structures.** These treatments of accumulated fuels have been increased from a maximum of 60 acres per year to 150 acres. On-going maintenance of these areas has also been increased from 100 acres per year to 300 acres per year. The reasons for the increases are to provide forest health benefits more quickly since the resources are expected to be available to treat at this level. Maintenance is also very important and is less expensive and intensive if performed regularly and as needed.
- **Clarifications to prescribed burning implementation to identify that pre-treatment occurs before prescribed burning and to describe the burn plan process.** These clarifications are needed to ensure that burn planning through development of a Burn Plan and/or Smoke Management Plan is consistent with laws and regulations. Minor changes to mitigation in relation to the clarifications presented in the BFFIP are shown in Section 2.3.

### 2.2.2 Revisions to the BFFIP

### 2.2.3 Chapter 4: Goal and Approach Framework for Plan

**Page 4-4 to 4-5 is proposed to be revised as follows:**

**4.2.2 Goal 2: Preserve and Enhance Existing Significant Biological Resources**

**Overview of Goal 2**

Another major focus of the BFFIP is to protect important biological resources and ecosystem functions on the District's lands. Enhancing ecosystem resiliency is a key strategy for the District to pursue. Resiliency is defined as an ecosystem's ability to

absorb shocks or perturbations and still retain desirable ecological functions, such as the abilities to provide breeding and foraging habitat for wildlife; to support significant biological resources such as rare, threatened, or endangered species; to regenerate desired plant communities following an adverse disturbance; to cycle nutrients; and to protect water quality. Primary ways to enhance resiliency are to minimize unnatural disturbance, mimic lost or diminished ecosystem processes such as naturally occurring wildfire, restore native plant communities, and eliminate or reduce weed populations. The goal of establishing resiliency is to foster conditions where the plant community can function without annual maintenance (Walker et al. 2004). The Plan also includes development and/or improved use of BMPs to protect sensitive plant species and habitats.

**Approaches Under Goal 2**

**Protection of Existing Resources**

- **Approach 2.3: Prevent the loss of special-status plant species, populations, and other sensitive resources**. The District will strive to avoid damage to sensitive resources when conducting activities on the watershed. Where maintenance requirements will potentially adversely affect significant resources, the District will conduct needed actions while implementing measures to avoid or reduce impacts to the degree feasible. To prevent the loss of special-status plants, the District will enhance existing habitat or reintroduce historic populations of special-status plant species where suitable habitat can be identified.

**Enhancement of Ecosystem Function**

- **Approach 2.4: Restore ecosystem resiliency, functions, and values in areas impacted by disease, weed invasion, fire suppression, climate change, and other ecosystem stressors.** The District will eliminate or contain weed growth and spread across the watershed; treat degraded sites to restore high quality habitat according to detailed restoration plans; restore ecosystem functions and values in areas heavily impacted by SOD; undertake small pilot studies and experiments to treat forest disease; and where broadcast burning is feasible, safe, and ecologically desirable, the District may use this tool to reintroduce fire's positive functions, such as germinating seeds of fire-dependent species, removal of weeds and biomass, and opening up habitat for species dependent on grassland or more open woodland communities.

  Where possible, the District will implement methods of treatment that are beneficial to significant resources when present in the treatment area, including rare plants. Methods of treatment, including prescribed fire, can be used in areas where scientific data supports that the rare plant species benefit from prescribed fire or other treatments. Qualified professionals (e.g., District biological staff with knowledge of the plant species) will determine the species that may benefit

based on expert knowledge and/or scientific studies, prior to implementing the treatments in areas of significant resources.

### 2.2.4 Chapter 6: Implementation of Vegetation Management Actions

**Table 6-1 on pages 6-2 to 6-4 is proposed to be revised as follows to combine the broom treatments from MA-24 with MA-20 and to increase maximum forestry acreages in MA-23:**

| Management Action No. | Action Description | Performance Criteria | Year 5 Implementation Level | Goal | Approach |
|---|---|---|---|---|---|
| MA-20 | Perform cyclical maintenance throughout the Infrastructure Zone with sufficient frequency to maintain design standards and throughout District Lands for broom removal. | • Retreat each fuelbreak once every 1 to 5 years, depending on the site characteristics | 200 acres | 1 | 1.1, 1.2, 1.3, 1.4 |
| | | • Complete mowing of fine fuels in the most ignition prone areas, including parking lots, picnic areas, and defensible space around structures within the first month of the start of the fire season and repeat if conditions warrant. [a] | 50 acres | | |
| | | • Perform cyclical roadside mowing. | 50 acres | | |
| | | • Perform cyclical dam maintenance | 50 acres | | |
| | | ~~• Remove all reproductive broom annually in the optimized and transitional fuelbreaks.~~<br>• Initial and long-term maintenance removal of reproductive broom throughout District lands. | ~~260 acres~~ 860 acres | | |
| MA-23 | Improve conifer and mixed hardwood forest stand structure and function in the Ecosystem Restoration Zone [b] | • Initial reduction in accumulated fuels and brush density in 180 acres of conifer and mixed hardwood stands within 5 years of Plan adoption. | ~~60 acres~~ 150 acres | 1.2 | 1.1, 1.3, 2.3, 2.4 |
| | | • Maintenance of areas where fuels and brush density were reduced and trees planted. | ~~100 acres~~ 300 acres | | |
| | | • Complete 100 acres of broadcast burning in forest | Up to two 20-acre projects | | |

| | | | | | |
|---|---|---|---|---|---|
| | | understory within 5 years of Plan adoption. | | | |
| MA-24 | Improve grassland and oak woodlands in the Ecosystem Restoration Zone [b] | • Conduct Douglas-fir thinning in grasslands and the understory of oak woodlands. | 200 acres | 1.2 | 1.1, 1.3, 2.3, 2.4, |
| | | • Complete 450 acres of broadcast burning in grasslands and open oak woodlands within 5 years of Plan adoption. | Three projects [d] (not to exceed 140 acres combined) | | |
| | | ~~• Remove 600 acres of reproductive broom.~~ | ~~505 acres~~ | | |
| | | • Reduce goatgrass to less than five percent of 2016 mapped levels. | 35 acres | | |
| | | • Reduce effort needed to maintain 2016 extent of yellow starthistle by 25 percent. | 120 acres | | |
| | | • Control other high priority weeds to prevent expansion beyond spatial extent documented in 2016 and achieve a 25 percent reduction in both weed cover and the level of effort needed to maintain it. | Covered by patches identified in MA-22 | | |

Notes:

[a] CAL FIRE determines the start of the official fire season each year based on weather conditions. Fire season typically starts between mid-May and early- June and extends into mid-November.

[b] The Ecosystem Restoration Zone includes the WAFRZ.

[c] A patch is defined as a maximum of 100 square meters (0.02 acre).

A project is defined as 38 acres but could vary by year.

**Pages 6-6 to 6-7 are proposed to be revised as follows, primarily to move all broom removal into MA-20:**

### 6.2.1 MA-20: Perform Cyclical Maintenance Throughout the Infrastructure Zone with Sufficient Frequency to Maintain Design Standards <u>and throughout District Lands for Broom Removal</u>

#### Overview

MA-20 includes vegetation management on permanent fuelbreaks adjacent to structures, utilities, and service roads. It includes activities such as retreating fuelbreaks, mowing in

the most ignition-prone areas, eliminating broom from fuelbreaks, and mowing dam faces and roadsides.

**Retreat Fuelbreaks**

The retreatment of existing fuelbreaks is intended to maintain reduced fuel loads and stand structure that will slow fire spread and reduce flame lengths. Fuel reduction areas will be maintained by re-cutting vegetation as warranted. Fuelbreaks are linear in nature. As such, vegetation management activities will move along the fuelbreak in a linear manner. The target is for each fuelbreak to be re-treated on a cyclical basis, as needed to maintain desired fuel characteristics; each fuelbreak will be re-treated at least once every 5 years. Compromised fuelbreaks, which have dense broom populations, and defensible space with grassy fuels will be treated every year.

The District is currently maintaining approximately 450 acres of infrastructure fuelbreaks. The District will continue to maintain these fuelbreaks. In addition, the District will construct, as a part of this Plan, approximately 50 additional acres by the end of 5 years following Plan adoption, resulting in a total of 500 acres of fuelbreak, and an additional 67 acres over the lifetime of the Plan for a total of 567 acres of fuelbreak. The District will maintain 200 acres of constructed fuelbreak annually. Treatment methods are described in Section 6.3.2.

**Complete Mowing of Fine Fuels in the Most Ignition Prone Areas**

Managing vegetation in the most risk-prone areas, including parking lots, picnic areas, and defensible space around structures is a top priority. These areas, which are most risk-prone, are currently maintained by the District, and will continue to be maintained by re-cutting vegetation as warranted. Hazard trees would be removed as necessary.

The target is for each ignition-prone area to be mowed within the first month of the start of the fire season. The California Department of Forestry and Fire Protection (CAL FIRE) determines the start of the official fire season each year based on weather conditions. The official fire season typically starts between mid-May and early June and extends into mid-November. The District currently mows 10 acres of fine fuels annually; this will increase to 50 acres per year within 5 years of Plan adoption.

**Perform Cyclical Roadside Mowing and Dam Maintenance**

Vegetation management around roadsides and dams is necessary to ensure the integrity of the infrastructure. The District will continue to conduct 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. The District will also continue to conduct dam maintenance on an as-needed basis to meet regulatory requirements for dams: lines of sight for spillways and groins must be clear (vegetation and debris removed) so visual inspections may occur; for earthen dams, woody vegetation of all kinds will continue to

be removed to prevent the growth of deep taproots that can impair the structural integrity of the dam. Pile burning of accumulated brush may occur in combination with mowing as part of the dam maintenance regime. The work is performed with a combination of heavy equipment with cutting or masticating heads mounted on articulating arms and with power tools including chainsaws and brushcutters. Slash is typically scattered on-site. The target is to perform ongoing roadside mowing and dam maintenance. The District current performs approximately 10 acres of roadside mowing and 20 acres of dam maintenance annually. The target is to perform of roadside mowing and 50 acres of dam maintenance annually at peak implementation levels.

**Remove Reproductive Broom ~~from Optimized and Transitional Fuelbreaks~~ across District Lands (All Zones)**

Implementation of this management action can be across all District lands. ~~Is restricted to Optimized Fuelbreaks and Transitional Fuelbreaks.~~ The District will take a site-based approach when eliminating broom. The intent is to eliminate broom where it is opportunistically possible across the District lands ~~inthese fuelbreaks~~. To accomplish this goal, broom plants would be removed annually before any are mature enough to flower and replenish the seedbank (i.e., reproductive broom). Broom removal requires the complete uprooting of the plant. Because soil disturbance stimulates germination of broom seeds lying dormant in the soil, initial clearing usually leads to a flush of new broom plants and the need to perform annual clearing at a level of effort commensurate with the initial clearing. The period of high-frequency, high-intensity pulling typically lasts between 5 and 7 years. Eventually, the level of effort needed to prevent seed production decreases, and there is a corresponding decrease in soil disturbance. District Watershed staff, based on their experience, consider broom "removed" from an area when there is a zero seed set for 7 consecutive years and when the effort needed to maintain zero seed set is reduced by 90 percent from the point of initial clearing. The District would annually remove ~~all~~ reproductive-aged broom across up to 860 acres, including all broom in Optimized and Transitional Fuelbreaks, as well as across District lands. ~~in 260 acres of Optimized and Transitional Fuelbreaks.~~ Treatment methods are described in Section 6.3.2.

**Page 6-9 is proposed to be revised as follows to reflect the changes to increase the maximum forestry treatment acreages:**

**6.2.4 MA-23: Improve Conifer and Mixed Hardwood Forest Stand Structure in the Ecosystem Restoration Zone/ WAFRZ**

**Reduce Accumulated Fuels and Brush Density in Conifer/ Mixed Hardwood Stands**

The District will reduce accumulated fuels and brush density in conifer and mixed hardwood forest to reduce wildfire risk and improve overall forest function. Thinning brush is an established means of promoting the growth of retained native trees by reducing the competition for light, nutrients, and water. Mid-canopy Douglas-fir trees

may require thinning by felling or girdling. During treatment site selection, the emphasis will be placed on the following types of sites, in the following order:

1. Sites with stands located in areas adjacent to formal fuelbreaks and/or where disease combined with decades of fire suppression have severely compromised forest functions and values.
2. Sites where the reduction in accumulated fuels and brush density meet both fire risk reduction objectives and ecosystem restoration objectives, such as WAFRZ.
3. Sites where impacts from SOD can be mitigated and greenhouse gas balance and water yield can be improved.
4. Sites where the potential impact to sensitive resources is minimal.

The District will treat approximately ~~60~~ 150 acres per year (in the fifth year of implementation), that have previously not been treated. By the fifth year of BFFIP implementation, the District will also conduct follow-up maintenance on approximately ~~100~~ 300 acres, assuming that some areas will only require one treatment and no follow up. Treatment methods are described in Section 6.3.2.

**Pages 6-10 to 6-11 are proposed to be revised as follows, consolidating broom removal into MA-20:**

~~**6.2.5 MA-24: Improve Grassland and Oak Woodland in the Ecosystem Restoration Zone**~~

~~Broom Removal~~

~~Broom elimination in the Ecosystem Restoration Zone will protect the rich assemblage of species and communities that provide both habitat and migration corridors. The District will take a site-based approach when eliminating broom. Broom removal projects in the Ecosystem Restoration Zone may be done simultaneously with fuelbreak maintenance in a specific area or as part of a restoration project. Broom removal requires the complete uprooting of the plant. Because soil disturbance stimulates germination of broom seeds lying dormant in the soil, initial clearing usually leads to a flush of new broom plants and the need to perform annual clearing at a level of effort commensurate with the initial clearing. The period of high-frequency, high-intensity pulling typically lasts between 5 and 7 years. Eventually, the level of effort needed to prevent seed production decreases, and there is a corresponding decrease in soil disturbance. District Watershed staff, based on their experience, consider broom "removed" from an area when there is a zero seed set for 7 consecutive years and when the effort needed to maintain zero seed set is reduced by 90 percent from the point of initial clearing. In the Ecosystem Restoration Zone, the District currently has 88 acres of broom in the initial phase of removal and an additional 205 acres in the long-term maintenance phase. The target is to have 505 acres of broom in management (300 in the initial clearing phase) within the Ecosystem Restoration Zone within 5 years of Plan adoption. Treatment methods are described in Section 6.3.2.~~

**Pages 6-19 to 6-20 are revised as follows to clarify the prescribed burning process and requirements:**

### 6.3.3 Techniques to Implement Management Actions

#### Prescribed Burning

#### Overview

Prescribed burning includes broadcast burning and pile burning. Permits from the Bay Area Air Quality Management District (BAAQMD) are required for all burns, as burning is only allowed on designated burn days during a specific time of the year.

#### Broadcast Burning

Broadcast burning is a specific activity in which fire is applied to most or all of a well-defined area with discrete boundaries for the combined purpose of fuel load reduction and habitat improvement. Burn units are generally selected to take advantage of natural breaks such as reservoirs and service roads. Broadcast burning occurs in four distinct phases: pre-treatment, the burn event, mop-up, and rehabilitation.

Pre-treatment is typically conducted before a burn to reduce fuel loading and establish control.

Pre-treatment includes:

- Removal of live limbs of trees up to 10 feet above the ground in order to minimize the potential for fire to spread to the canopy
- Scattering and/or mastication of accumulated dead and decadent woody brush
- Top-cutting and on-site scattering of green brush (particularly broom) a minimum of 60 days before the burn event to cure, which facilitates horizontal fire spread during the event and reduces smoke production
- Installation of control lines (approximately 1- to 3-foot-wide bands where vegetation has been cleared to expose mineral soil) where natural control lines such as roads, trails, or water bodies are unavailable

Limbing, scattering, and masticating dead material and top-cutting of green material may occur many months to days prior to the burn event, depending on the larger project goals and site conditions. The work is accomplished with a combination of heavy equipment, power tools, and hand tools. Control line installation occurs within a few weeks or days of the burn event and may be accomplished with heavy equipment or hand tools.

The burn event is a half-day activity when fire is intentionally applied at one or more ignition points and allowed to run between control lines across the designated unit. It is

typically conducted in the morning when temperatures and wind are low. The Marin County Fire Department, CAL FIRE, or similarly qualified entity provide oversight for all broadcast burns conducted on District lands. Ignitions are achieved using drip torches with a 1:4 mix of gasoline and diesel. Up to four drip torches may be used in a single event, expending no more than 10 total gallons of fuel mix. Fire apparatus on-site will include multiple Type III fire engines and one or more water tenders to provide control and on-scene safety. Tenders and fire engines typically stay on existing service roads to provide pumped water via hose-lays which can be deployed for hundreds of feet as needed.

Mop-up begins immediately following the main burn event and may continue for 1 to 3 days depending on the site conditions and weather. Mop-up crews typically remain on-site continuously for a minimum of 48 hours following the burn event. Mop-up crews patrol the burn unit to extinguish smoldering logs (using hose lays and backpack-mounted water pumps as well as hand tools and chainsaws), break up embers with hand tools, and fell hazard trees or limbs with chainsaws.

Rehabilitation consists of the decommissioning of control lines as well as follow-up weed control. Control line decommissioning is generally limited to the manual re-distribution of duff and brush back into the previous cleared lines. This spreads native seed back into the lines to facilitate natural revegetation. It also provides erosion control and discourages the formation of social trails. Because some weed seeds are stimulated by fire or become readily established in post-fire settings, broadcast burn sites will be patrolled by EDRR crews for 1 to 5 years as needed following a burn event.

Broadcast burning will be used to achieve desired outcomes under MA-23 and MA-24. Burns will be conducted under optimal burn conditions (e.g., fuel moisture content) in accordance with a Burn Plan written by a qualified burn plan preparer and/or Smoke Management Plan. Burns may be scheduled to occur before new vegetation growth increases fuel loads, when logistically appropriate. The requirements of relevant regional, state, and federal laws pertaining to human health during prescribed burning will be included in the Burn Plan and/or Smoke Management Plan. Burns in Marin County are typically conducted between June and October to achieve the benefits of mimicking the historic fire regime, and when vegetation is dry enough to carry a fire with minimal smoke production and minimal damage to the seed bank. Broadcast burning may be used under MA-25, MA-26, and MA-27.

## 2.3 Revised Mitigation Measures

### 2.3.1 Purpose of Revisions

This addendum includes some revisions to mitigation measures in relation to the changes made to the BFFIP.

## 2.3.2 Revisions to Mitigation Measures

**Page 3.2-41 is proposed to be revised as follows:**
**MM Air-3: Minimization of Air Pollutant Risk**

The District shall require that prescribed burns on its lands are conducted a minimum of 1,000 feet away from sensitive receptors, specifically residences, schools, and childcare centers or the distance specified to avoid smoke impacts to sensitive receptors in the Smoke Management Plan, as required under BAAQMD Regulation 5.

The District shall require that prescribed burns on its lands are managed to reduce District worker exposure to CO concentrations and other air pollutants through implementation of the following measures:

- Use of realtime CO monitors,
- Rotate personnel out of heavy smoke areas,
- Avoid burning heavy fuel loads on the ground, such as large logs, to avoid additional mop-up,
- Tested and approved by NIOSH full-face and half-face air purifying respirators shall be equipped with filters for CO, formaldehyde, acrolein, and respirable particulate matter and available at all times for District staff or contractors working in the immediate vicinity of broadcast and pile burns, ~~or~~
- Or otherwise follows the requirements of relevant regional, state, and federal laws pertaining to human health during prescribed burning.

**Pages 3.3-124 to 3.3-125 are proposed to be revised as follows:**
**MM Biology-2: Protection of Special-Status Plants**

The following measures shall be implemented to protect special-status plants:

a. Prior to conducting any vegetation management activity (mechanical or manual removal), prescribed (broadcast and pile) burning, propane flaming, and animal grazing the area shall be reviewed by the District's botanist against the most current mapping data of special-status plant species and habitats. If the work is to occur in in serpentine habitat, within 500 feet of known special-status plant populations, near wetlands, or within other habitats with potential to support special-status plant populations, botanical surveys shall be conducted by a qualified botanist ahead of the planned work. The surveys shall be specific to the species of plants that could occur, must be conducted during a period when the special-status species that could occur in that habitat can be most readily detected (e.g. blooming period), and shall include the entire footprint of the proposed work. Any species

identified during surveys shall be added to the GIS of current mapping data. If work is to occur again in the same area within 5 years (e.g., new fuelbreaks or retreatment areas for forestry actions), a new survey is not required.

b. For listed species with known rarity or declining populations that could be adversely impacted by treatments, including CRPR Rank 1B, 2, and some rank 4 species that are known rare), as determined and listed below by the MMWD botanical staff, the MMWD's botanical staff shall:
   i. Flag or otherwise demarcate the individual or population to ensure workers avoid the species, for no loss of individuals.
   ii. Establish a buffer of 100 feet around the individual or population, for species that could be adversely impacted by the treatments.
   iii. Require implementation of BMP-1 through BMP-3 for work conducted adjacent to these species to minimize the spread of invasive species.

- Brewer's milk vetch (*Astragalus breweri*)
- Brewer's calandrinia (*Calandrinia breweri*)
- Johnny-nip (*Castilleja ambigua var. ambigua*)
- Marin western flax (*Hesperolinon congestum*)
- Bristly leptosiphon (*Leptosiphon acicularis*)
- Santa Cruz microseris (*Stebbinsoseris decipiens*) *
- Coast rockcress (*Arabis blepharophylla*)
- Pink star-tulip (*Calochortus uniflorus*)
- Thin-lobed horkelia (*Horkelia tenuiloba*)
- Small groundcone (*Kopsiopsis hookeri*)
- Gairdner's yampah (*Perideridia gairdneri ssp. gairdneri*)
- North coast semaphore grass (*Pleuropogon hooverianus*)
- Marin manzanita (*Arctostaphylos virgata*)
- Glory brush (*Ceanothus gloriosus var. exaltatus*)
- Mason's ceanothus (*Ceanothus masonii*)

* This species is likely extirpated

c. For other listed species of CRPR rank 1B or 2 (beyond those identified in part b, above) with the potential to occur on District lands, the following measures shall be implemented for any treatments that could adversely impact the species (per Approaches 2.3 and 2.4 of Chapter 4 of the BFFIP):

i. Perennials:

1. Mark populations in the field with distinct flagging. Ensure that worker training is complete per MM Biology-1.

2. Avoid populations. If mowing cannot be safely performed up to the perimeter of the individuals, or timed for when they are senescent, then hand methods (i.e., hand pulling or use of non-powered or powered hand tools) shall be employed to prevent damage or removal of listed species.

3. Where tree or shrub species must be trimmed, such as Mount Tamalpais manzanita, follow any protocols or recommendations available, such as including the following the *Status and Management Recommendations for Arctostaphylos virgata (Marin Manzanita) in Point Reyes National Seashore* (Parker, 2007) and plant specific pruning tips (Las Pilitas Nursery, 2012) and perform the work by hand.

4. No net loss of ~~an annual~~ perennial special-status species can occur. The population size shall be determined from the most recent survey data of the species.

   If an individual or population must be removed, one or two options can be employed (subject to CDFW approval) and monitoring conducted to ensure that no net loss of the species occurs.

   - (1) The individual or population can be dug up and relocated to appropriate habitat outside the work area. (2) A nursery with experience growing special-status plants can be employed to grow seedlings of the species that shall be planted in appropriate habitat outside the work area or in the work area following completion of work. If located outside the work area, appropriate habitat shall be within the same watershed as the impact area, and shall be identified or approved of by MMWD botanical staff.
   - A monitoring plan shall be developed that details the following components. Conduct annual monitoring of seeded or replanted locations for a minimum of 3 years and

up to 5 years, dependent upon the MMWD botanical staff recommendation and monitoring results. If the new population is not matching the pre-removal population data, more seeding or planting shall be conducted until pre-removal population is met.

ii. Annuals:

1. Flag or otherwise demarcate and ensure workers avoid the species as feasible; or,

2. Time vegetation management activities for when the special-status species occurring in the work area is senescent and/or after the seed has set.

3. Monitor populations between vegetation management activities to ensure that population sizes are not decreasing. If populations are decreasing and a correlation can be made to the maintenance activities, measures shall be identified by MMWD botanical staff and taken to improve the population, including but not limited to one of the following: avoiding the area in question or altering the management activity frequency.

4. No net loss of an annual special-status species can occur. Due to the variations in population from year to year as a result of weather fluctuations, average population data can be calculated from several years of data collected during the annual census conducted by MMWD or by volunteers as directed by MMWD.

5. If an individual or population must be removed, one or two options can be employed and monitoring conducted to ensure that no net loss of the species occurs.

   (1) Seeds of the annuals shall be collected from existing on-site populations or from the same watershed (to maintain local genetic stock) and distributed in appropriate habitat outside the work area (within the same watershed) or in the work area following completion of work. (2) A nursery with experience growing special-status plants can be employed to grow seedlings of the species (from seeds collected locally) that shall be planted in appropriate habitat outside the work area or in the work area following completion of work. It should be noted that seeds derived from plants in the same watershed as the impact area may be available from local nurseries, and local nurseries may also be able to propagate seeds from adults grown from collected seeds. In this case, seeds do not need to be collected from a specific impact area site. Appropriate habitat shall be identified or approved of by MMWD botanical staff.

(2) A monitoring plan shall be developed that details the following components. Conduct annual monitoring of seeded or replanted locations for a minimum of 3 years and up to 5 years, dependent upon the MMWD botanical staff recommendation and monitoring results. If the new population is not matching the average population data, more seeding or planting shall be conducted until pre-removal population levels are met.

**Page 3.7-38 is proposed to be revised as follows:**

**MM Hazards-5: Roads and Trails Around Broadcast Burns**

**Trails and District-Use-Only Roads**

District-use-only roads and trails shall be closed to public recreational access if determined to be necessary in accordance with the burn-specific Burn Plan and/or Incident Action Plan ~~within at least 500 feet of the outermost edges of a broadcast burn~~. District-use-only roads and trails shall be posted and blockaded with temporary fencing or the like, if closures are needed. Notices of closures shall be posted at the trail heads and on the District's website, when needed. Additional measures such as staffing trail head closures can be implemented as needed.

**Public Roads**

If possible, public roads within 500 feet of the outermost edges of a broadcast burn shall be closed in coordination with the appropriate agency (e.g., Caltrans, Marin County). In the event this is not feasible, due to volume of traffic or lack of alternative routes, a Traffic Control Plan shall be prepared and adopted, in coordination with the appropriate agency. The Traffic Control Plan shall include the following at a minimum:

- Requirement to coordinate with local law enforcement (e.g., County Sheriff, California Highway Patrol)
- Installation of temporary signage at intervals ahead of and adjacent to the broadcast burn indicating that a broadcast burn is in progress

  Use of flaggers to slow traffic during the burn or stop traffic if wind conditions shift, resulting in smoke crossing the road.

# 3 Evaluation

## 3.1 Aesthetics

The BFFIP PEIR analysis concluded less than significant impacts on scenic vistas and visual character and quality. Similar to the adopted BFFIP, the revised BFFIP would continue to utilize the 27 specific actions, including the eight management actions that involve vegetation management in the field that would cause a visual change through the use of hand tools and mechanical equipment to establish and maintain fuelbreaks and defensible space; to remove invasive plant species; and to improve and restore native ecosystem on watershed lands. Under the revised BFFIP, trails and roads that may afford views to management activities may remain open based on on-the-ground personnel expertise and in accordance with the burn-specific Burn Plan and/or Incident Action Plan.

Revisions made to the BFFIP actions and the BFFIP PEIR mitigation measures that involve a visible change on the District's landscape include the combining of all broom management activities into one management activity, which would allow for greater flexibility in land management. More broom management activities could occur within a single area resulting in potentially higher visibility; however, the revisions to combine the broom maintenance activities would not change the temporary and localized nature of the broom maintenance activities. The grouping of all broom management activities could also result in less initial broom removal as areas of long-term broom maintenance would likely increase. In the long-term, broom removal would have a positive visual effect by removing invasive species and allowing for the regrowth of native, natural habitat and potentially greater diversity later filling in. Similar to existing conditions and consistent with the determination in the BFFIP PEIR, once the work is completed, the change would not be perceptible to most viewers.

The increase in acreages treated to improve conifer and mixed hardwood forest stand structures from 60 acres a year to 150 could result in visual impacts. The BFFIP PEIR addresses changes to forest stand structures from MA-23, the analysis found that while the forest density and type may be altered, it would still conform to existing variability across the Watershed and would not degrade the visual quality of the Watershed. Increasing the acreage treated per year from 60 to 150 would still represent a less than significant impact because it would not result in significant changes in the landscape given the overall scale of the landscape and changes would remain consistent with existing variability, as discussed in the PEIR. Visual change would remain low. Visual changes would continue to occur within the BFFIP landscape; however, visual impacts from these activities have already been described within the adopted BFFIP and certified BFFIP PEIR. Therefore, the revised BFFIP actions and mitigation measures would not

result in new or substantially more severe impacts to aesthetics than those analyzed in the certified BFFIP PEIR.

## 3.2 Agriculture and Forestry Resources

The BFFIP Initial Study concluded no impacts to agriculture and forestry resources and these resource topics were not evaluated further within the BFFIP PEIR. The BFFIP PEIR determined that no lands within the BFFIP contained agricultural uses. The BFFIP PEIR also determined that although forests within the BFFIP lands met the definition of forest lands per the state Public Resource code Section 12220, that no impacts would occur since no rezoning or change in function and use of the forests would occur, nor would any activities occur that would result in the conversion of forest to non-forest lands.

Under the revised BFFIP, no changes to conditions would occur that could result in an impact on agriculture or forestry resources that could result in a conversion of land to a different use (in this case forestry). The revised BFFIP would not result in new or substantially more severe significant impacts on agriculture or forestry resources than those analyzed in the BFFIP PEIR.

## 3.3 Air Quality

### 3.3.1 PEIR Summary

The BFFIP PEIR analysis concluded significant and unavoidable impacts to cumulatively considerable net increase in a criteria pollutants for which the project region is in nonattainment.

The BFFIP PEIR analysis also concluded significant and unavoidable impacts to conflict with or obstruct implementation of an applicable air quality plan. The BFFIP PEIR concluded less than significant impacts with mitigation to exposing sensitive receptors to substantial pollutant concentrations.

### 3.3.2 Criteria Pollutants

The BFFIP PEIR analysis concluded that significant and unavoidable impacts on air quality from criteria air pollutant particulate matter with a diameter of 10 microns or less ($PM_{10}$), particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$), and nitrogen oxides ($NO_x$) (a precursor to ozone) would occur primarily from broadcast burning activities. The revised BFFIP would allow for an increase in beneficial maintenance activities, including the use of manual and mechanical tools and equipment and prescribed burns. Use of vehicles and equipment during these activities and to reach project sites would generate exhaust emissions. Fugitive dust would be generated from equipment and vehicle use on paved and unpaved roads, from ground disturbing activities, and from prescribed burning. The continued implementation of manual vegetation removal, planting, and grazing generally would not emit criteria air pollutants.

The revised BFFIP would combine broom management activities to allow for greater flexibility in broom management under management activity number MA-20; however, total maximum acreages that could be treated would not change. Increases in acreages for beneficial maintenance activities proposed under the revised BFFIP would, however, be added to management activity number MA-23, increasing the acreage treated from 60 acres a year to 150, although most of this work would be through manual and mechanical methods. The revisions do not include increasing the maximum allowed broadcast burns under MA-23 beyond the allowed 20 acres per year.

Although the revised BFFIP proposes an increase in management activities, acreages of vegetation management are anticipated to be shifted from initial clearing to long-term management resulting in criteria air pollutant emissions similar to those analyzed under the certified BFFIP PEIR. An incremental increase in criteria air pollutants, however, could still occur. Criteria pollutants that exceeded standards as analyzed in the BFFIP PEIR included particulate matter 10 microns or greater in diameter ($PM_{10}$), particulate matter 2.5 microns in diameter ($PM_{2.5}$), and reactive organic gases (ROG). Table 3.2-7 of the PEIR identifies that 92 percent of the emissions of $PM_{10}$, 98 percent of the emissions of $PM_{2.5}$, and 99 percent of the emissions of ROG are attributed to broadcast burning. While the increased acreages treated under the MA-23 in the revised BFFIP would result in some increases in criteria pollutants, those increases would be marginal since emissions from all other treatments besides broadcast burning were minimal and expanded broadcast burning is not proposed.

The revised BFFIP will also allow for the use of prescribed burning in areas where it could benefit plants; however, the total acreages of prescribed burning would not change and thus emissions are not expected to change from the levels assessed in the BFFIP PEIR.

The revised BFFIP would allow for greater flexibility to conduct additional fuel management activities, which is also anticipated to reduce the likelihood of a catastrophic fire as well as reduce the overall level of effort required annually over time. The approved mitigation measure MM Air-1 would also be implemented for the revised BFFIP to reduce impacts from criteria air pollutants through implementation of measures under MA-23 and MA-24 on vegetation types that emit less air pollutants, although the impact would still likely remain significant and unavoidable, namely due to broadcast burning.

The revised BFFIP would not result in new or substantially more severe impacts to air quality from criteria air pollutants than those analyzed in the certified BFFIP PEIR.

### 3.3.3 Toxic Air Contaminants and Other Pollutants

The BFFIP PEIR concluded that prescribed burning activities would release smoke, which could expose workers, recreationalists, and the public to toxic air contaminants emissions, including particulate matter, acrolein, and formaldehyde. The revised BFFIP would allow an incremental increase to initial and long-term management activities, which may include some increases in pile burning to treat additional acreages under MA-23, but no increase in broadcast burning.

Pile burning under the revised BFFIP would continue to only occur a few times a year, over a few days in duration, and would occur within varying locations within the District land.

Actions implemented under the revised BFFIP would continue to require adherence to MM Air-3 and MM Air-4, and the preparation and implementation of a Smoke Management Plan in accordance with the BAAQMD Regulation 5 for any prescribed burn. Revisions were incorporated to MM Air-3 to further clarify that the District would follow the requirements of relevant regional, state, and federal laws pertaining to human health during prescribed burning. MM Air-3 was also revised to address that the distance requirements between broadcast burns and sensitive receptors would be 1,000 feet *or the distance specified in the Smoke Management Plan*. This distance may be greater, or less than 1,000 feet given the particular conditions at the time of the planned broadcast burn. The BFFIP EIR did not provide a specific analysis of impacts from smoke at 1,000 feet, but instead states that "Short-term health impacts are not easily modeled and identified as they would depend on the management of smoke to minimize its drift towards inhabited areas. Smoke drift depends on many factors including the fuel burned, fuel moisture content, and variable atmospheric conditions." Burns are planned for and conducted under optimal weather conditions to limit air quality and smoke issues for neighboring communities and ensure fire fighters can maintain control. A Smoke Management Plan must be prepared and implemented for prescribed burns in accordance with and including all the information and restrictions required by BAAQMD's Regulation 5, MBARD's Rule 438, and CCR Title 17, Subchapter 2. For burn events, exposure to TAC emissions would be minimized by ensuring smoke does not drift or blow towards areas with sensitive receptors, in accordance with the Smoke Management Plan. Smoke drift that could cause short-term health effects would, therefore, be minimized. Contingency actions identified in the Smoke Management Plan would be taken if a burn unexpectedly impacts sensitive receptors. Contingency actions would include halting ignition, suppressing fire, and beginning immediate mop up before a significant exposure can occur. It is acknowledged that some short-term effects from smoke may still be experienced in these rare circumstances, such as stinging, watery eyes, coughing, and runny noses as well as shortness of breath, headaches, dizziness, and nausea. The duration of such effects would be very short and can generally be avoided by remaining indoors with windows closed, wearing a dust mask when outside, or moving away from affected outside areas until the smoke clears. Smoke generated by each prescribed burn conducted under the BFFIP could still expose sensitive receptors (including nearby residences) to TAC emissions, but those exposures would be short-term and thus would not pose a significant health risk, consistent with the finding in the Final EIR. The revised BFFIP would not result in new or substantially more severe impacts to air quality from prescribed burning actions than those analyzed in the certified BFFIP PEIR.

The revised BFFIP and BFFIP PEIR would also increase initial and long-term maintenance to reduce slash and burn density in conifer and mixed hardwood forest to improve overall forest function by treating areas with heavy equipment and hand crews. An increase in vegetation management using mechanical equipment could potentially occur in areas with serpentine soils and serpentine rock formations that could cause an increase in the chance of potentially

exposing workers to asbestos dust. The revised BFFIP and BFFIP PEIR would continue to require adherence to MM Air-2 which would reduce the risk to asbestos exposure by requiring the watering of disturbed soils and limited vehicles speeds to less than 15 mph on unpaved roads. Therefore, the revised BFFIP would not result in new or substantially more severe impacts to air quality from asbestos exposure than those analyzed in the certified BFFIP PEIR.

### 3.3.4 Conflict or Obstruct Implementation of an Applicable Air Quality Plan

The 2017 Clean Air Plan includes voluntary programs and incentive measures for transportation and control measures that do not require vehicle upgrades or retrofits, as analyzed under the certified BFFIP PEIR. Similar to the adopted BFFIP, the revised BFFIP would not conflict or obstruct implementation of the control measures identified to achieve the goals of the 2017 Clean Air Plan. Similar to the adopted BFFIP, the revised BFFIP could conflict with the emission goals of the 2017 Clean Air Plan through exceedance of thresholds for particulate matter and NOx. The revised BFFIP would increase initial and long-term maintenance activities annually that could incrementally increase particulate matter and NOx emissions; however, as previously stated, activities would be temporary, occur in varying locations within the District lands, and would be required to comply with MM Air 1. Therefore, the revised BFFIP would not result in new or substantially more severe impacts to conflict or obstruct with the implementation of the 2017 Clean Air Plan than those analyzed in the certified BFFIP PEIR.

The 2001 Ozone Attainment Plan includes control measures for on-road motor vehicles. Similar to the adopted BFFIP, the revised BFFIP would require on-road vehicles used during operation of the plan to be inspected biennially as part of the current program. Under the revised BFFIP, no changes to conditions would occur that could result in a conflict or could obstruct implementation of the 2001 Ozone Attainment Plan.

## 3.4 Biological Resources

### 3.4.1 PEIR Summary

The BFFIP PEIR analysis concluded less than significant impacts with mitigation on biological resources with the incorporation of numerous mitigation measures to generally avoid impacts to listed species through pre-work surveys and modifications to treatments.

### 3.4.2 Special Status Plant Species

The revised BFFIP would increase initial and long-term maintenance activities under MA-23 as well as combine broom management activities under MA-20; however, the revised actions would not increase the previously identified management boundary of the adopted BFFIP and certified BFFIP PEIR, nor would it allow additional management actions that were not previously analyzed under the adopted BFFIP and certified BFFIP PEIR. Changes to these actions have the same potential for impacts to special status plant species as were analyzed in the BFFIP PEIR.

Implementation under the revised BFFIP would continue to require adherence to MM Biology-1, MM Biology-2, MM Biology-3, and MM Geology-1 to avoid or minimize impacts. These measures require worker training programs presented by a qualified biologist prior to any commencement of activities, protection of special-status plants, measures to prevent and spread invasive species and forest diseases from plan activities, and measures to reduce the loss of topsoil from erosion. Goal 2 and MM Biology-2 related to ecosystem resiliency and protection of special status species are proposed to be revised under the revised BFFIP to allow methods of treatment that are beneficial to significant resources when present in the treatment area, including rare plants.

The BFFIP revisions also include clarifications to allow for beneficial treatments in areas of rare plants, including special status plants. Methods of treatment, including prescribed fire, could be used but only when scientific data supports that the rare plant species benefits from prescribed fire or other beneficial treatment. A qualified professional with knowledge of the plant species will determine the species that may benefit based on expert knowledge and/or scientific studies prior to implementing the treatments in areas of significant resources. Therefore, the revised BFFIP would not result in new or substantially more severe impacts to special status plant species than those analyzed in the certified BFFIP PEIR.

### 3.4.3 Special-Status Wildlife

BFFIP actions can occur in areas where several special-status wildlife species have been recorded or appropriate habitat is present. Implementation under the revised BFFIP would continue the use of mechanical equipment during treatment that has the potential to injure or kill special-status mammals, amphibians, reptiles, insects, and mollusks if activities occur within habitats where these species are known to occur. Although the revised BFFIP would allow for an increase in initial and long-term maintenance activities under MA-23 and combine broom management activities under MA-20, the revised actions would not increase the previously identified plan area boundary nor would it allow additional management actions that were not previously analyzed under the adopted BFFIP and certified BFFIP PEIR.

The revisions under MA-23 and MA-20 would continue to require adherence to the following mitigation measures for the protection of special-status wildlife species: MM Geology-1 (Erosion Control and Slope Stability Measures), MM Biology-1 (Worker Training), MM Biology-7 (Protection of Nesting Birds), MM Biology-8 (Northern Spotted Owl Avoidance During Nesting Season), MM Biology-9 (Protection of Western Pond Turtle Nesting Habitat), MM Biology-10 (California Red-Legged Frog Avoidance), MM Biology-11 (Marin Elfin Butterfly Host Plant Avoidance), MM Biology-12 (Protection of Foothill Yellow-Legged Frog), MM Biology-14 (Northern Spotted Owl Avoidance of Nesting Season and Habitat), and MM Biology-17 (Protection of California Giant Salamander). Therefore, the revised BFFIP would not result in new or substantially more severe impacts to special status wildlife than those analyzed in the certified BFFIP PEIR.

### 3.4.4 Riparian Habitat or Other Sensitive Natural Community

The BFFIP and BFFIP PEIR found that while manual and mechanical management techniques can be beneficial to riparian habitat and other sensitive natural communities through invasive species removal, operation of heavy equipment or vehicles within a seasonal wetland (while the ground is wet) could disturb the topography, hydrology, and/or overall condition of the seasonal wetlands. The BFFIP and BFFIP PEIR found this disturbance could result in erosion or compaction of soils altering their ability to support wetland species. The BFFIP and BFFIP PEIR also found that management activities from limbing trees and use of mowers have the potential to spread forest pathogens leading to deaths of trees or loss of sensitive grassland communities.

The revised BFFIP would allow for an increase in management activities under MA-23 that could lead to an increase in use of mechanical equipment within seasonal wetlands, grassland communities, and forests. The revised BFFIP would continue to require adherence to MM Biology-1, MM Biology-2, MM Biology-3, MM Biology-4, MM Biology-15, and MM Biology-16. These measures would collectively require worker training in identification of sensitive habitats, following protocols for Mount Tamalpais manzanita trimming using manual methods (a sensitive plant community within the plan area), techniques to reduce the spread of invasive plant species, evaluation of areas where heavy vehicle equipment would be used and implementation of appropriate avoidance and minimization measures as identified by a biologist, and identification and evaluation of native grassland communities by the District biologist followed by monitoring. The revised BFFIP would not include increased broadcast burn acreages, and thus would not result in changes to the analysis if broadcast burning presented in the BFFIP PEIR. Pile burning could occur near riparian corridors under MA-23, the methods and measures identified in the PEIR would also apply under the revisions that increase acreages of treatment. With implementation of MM Geology-1, which prohibits broadcast burning within a 50-foot buffer around perennial and intermittent streams when the broadcast burn is proposed on a slope greater than 30 percent and upslope of the stream, impacts would be the same as analyzed in the BFFIP PEIR and less than significant.

The revised BFFIP would not result in new or substantially more severe impacts to riparian habitat and other sensitive natural communities by manual and mechanical techniques for vegetation removal than those analyzed in the certified BFFIP PEIR.

### 3.4.5 State and Federally Protected Wetlands

The BFFIP and BFFIP PEIR found that travel and equipment transport to forest treatment sites could include in-channel stream or creak crossings that could impact jurisdictional waters. Implementation under the revised BFFIP would continue the equipment transport to forest treatment sites that could impact jurisdictional waters, with similar potential but for increased acreages treated each year under MA-23. Work under the revised BFFIP would continue to require MM Biology-15, MM Hydrology-1, and the appropriate 1600 Streambed Alteration permit from CDFW and section 401 and 404 Clean Water Act permits, if required by CDFW. MM Biology-15 requires review of overland travel routes by the District biologist prior to access and flagging of potential wetlands near or along overland travel routes. MM Hydrology-1

requires avoidance of stream crossing of or access by equipment and vehicles to the greatest extent feasible or avoidance of stream bank and bed alternation and restoration of any damaged areas after access.

Therefore, implementation of the revised BFFIP would not result in new or substantially more severe impacts to state and federally protected wetlands than those analyzed in the certified BFFIP PEIR.

### 3.4.6 Wildlife Movement

The BFFIP and BFFIP PEIR found that because the watershed land is an important wildlife corridor, alteration of certain habitat types could impact wildlife movement. Revisions to MA-23 under the BFFIP would result in an increase in initial and long-term management activities that could impact wildlife movement within the district land; however, the revised BFFIP would continue to require MM Biology-3 (Prevent the Spread of Invasive Species), MM Biology-5 (Roosting Bats), MM Biology-6 (Protection of Badgers), MM Biology-7 (Protection of Nesting Birds), MM Biology-8 (Northern Spotted Owl Avoidance During Nesting Season), MM Biology-9 (Protection of Western Pond Turtle Nesting Habitat), MM Gology-1 (Erosion Control and Slope Stability Measures), MM Geology-3 (Grazing Land and Trail Control), and MM Hydrology-1 (Water Quality Protection During Waterway Crossing or Work Near Waterbodies).

Therefore, the revised BFFIP would not result in new or substantially more severe impacts to wildlife movement than those analyzed in the certified BFFIP PEIR.

## 3.5 Cultural Resources

The BFFIP PEIR analysis concluded less than significant impacts with mitigation on human remains and historical and archaeological resources. The BFFIP PEIR also identified less than significant impacts to paleontological resources.

The revised BFFIP would maintain the same management techniques as described within the adopted BFFIP, although it would increase acreage treated under MA-23. The revised BFFIP would not result in additional disturbance types that have not already been analyzed per the adopted BFFIP and certified BFFIP PEIR. Similar to the adopted BFFIP, the revised BFFIP would include several vegetation management actions that have at least a minor potential to disturb the ground surface. As previously analyzed under the BFFIP PEIR, continued intensive vegetation thinning and removal, prescribed burning, and the use of heavy equipment, in particular, have some potential to cause adverse changes to significant cultural (historic or archaeological) resources. The revised BFFIP would continue to require adherence to MM Cultural-1, MM Cultural-2, MM Cultural-3 and MM Cultural-4 which require trainings to workers on archaeological and historic resource identification and sensitivity, review of maps identifying cultural resource locations by District trained staff prior to conducting activities, cessation of work within 165 feet of a previously undiscovered cultural resource and avoidance

or treatment of the resource, and halt work within 165 feet of the discovery and to contact the Marin County's Coroner's office followed by an appointment with the Most Likely Descendant to determine the appropriate course of action. Therefore, the revised BFFIP would not result in new or substantially more severe impacts to cultural resources than those analyzed in the certified BFFIP PEIR.

The BFFIP PEIR identified some fossils that have been recorded within the plan area, but none were considered to be unique paleontological resources. The geologic units that underlie the plan area have low or no potential to yield unique paleontological resources. The revised BFFIP PEIR would not change the boundaries of the plan area. Similar to the adopted BFFIP, the revised BFFIP would not disturb soil depths in excess of shrub or tree roots. Therefore, the potential for the revised BFFIP PEIR ground-disturbing activities to uncover, much less destroy, a unique paleontological resource, continues to be very unlikely. The revised BFFIP would not result in a new or substantially more severe significant impact related to paleontological resources than those analyzed in the certified BFFIP PEIR.

## 3.6 Energy

The BFFIP PEIR analysis concluded less than significant impacts on energy use. The BFFIP determined that the fuel needed to implement the adopted BFFIP was considered beneficial, necessary, and not wasteful given the outcome of the work. The BFFIP PEIR also concluded that the adopted BFFIP would not substantially increase the overall demand for energy in California or substantially affect supply. The revised BFFIP would incrementally increase the use of energy as a result of increase acreages allowed for initial and long-term maintenance activities; however, the work associated with the revised BFFIP would continue to minimize risks to structures and people from wildfire as well as enhance the natural ecosystem; the energy use would be considered beneficial, necessary and not wasteful. The incremental increase would not create an additional demand for energy in California or substantially affect supply. The revised BFFIP would also not change the conditions that could result in an impact on energy related to a state or local plan because no state or local plans for renewable or energy efficiency apply to the BFFIP. Therefore, the revised BFFIP would not result in new or substantially more severe significant impact related to energy than those analyzed in the BFFIP PEIR.

## 3.7 Geology and Soils

The BFFIP PEIR analysis concluded less than significant impacts with mitigation on geology and soils. The revised BFFIP would not increase the previously identified management boundary of the adopted BFFIP and certified BFFIP PEIR, nor would it allow additional management actions that were not analyzed under the certified BFFIP PEIR. Similar to the adopted BFFIP, the revised BFFIP would continue to include maintenance activities that could cause erosion and loss of topsoil through removal of vegetation covering slopes and exposing bare soil, and through the removal of plants by the root systems that bind soil particularly on slopes. Erosion could degrade soil nutrient levels, reduce habitat sustainability, and could result

in downstream sedimentation, which could have an adverse impact on downstream waters, as analyzed within the BFFIP PEIR. The revised BFFIP would allow for an incremental increase in acreages allowed for initial and long-term maintenance activities under MA-23; however, all management actions taken under the revised BFFIP PEIR would adhere to MM Geology-1, MM Geology-2, and MM Geology-3. MM Geology-1 requires use of erosion control measures in areas with bare soil and controlled burned to reduce potential erosion impacts and requires consideration of slope stability prior to conducting work to minimize the likelihood of landslides during or after the work is completed. MM Geology-2 requires use of existing facilities for fire lines where they occur or implementing other erosion control measures to minimize impacts related to erosion and slope stability issues. MM Geology-3 requires and grazing land and trail control measures for erosion and reduction of potential sedimentation impacts to downstream receiving waters. Therefore, the revised BFFIP would not result in new or substantially more severe significant impact related to geology and soils than those analyzed in the BFFIP PEIR.

## 3.8 Greenhouse Gas Emissions

The BFFIP PEIR analysis concluded significant and unavoidable impacts on greenhouse gas emissions related to conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing greenhouse gas emissions. The BFFIP PEIR also concluded significant and unavoidable impacts related to generation of greenhouse gas emissions that may have a significant impact on the environment, largely due to broadcast burning activities. The BFFIP PEIR analysis concluded less than significant impacts on substantially decreasing the overall ability of District lands in the plan area to sequester carbon.

Similar to the adopted BFFIP, the revised BFFIP would involve activities that would emit GHG emissions including the use of mechanical vegetation removal equipment and prescribed burning. Total acreage allowed per year of prescribed broadcast burning would not increase; however, some pile burning increases may occur due to increased acreages treated.

Vehicles and equipment use to travel to the sites where management activities occur would generate GHG emissions. The revised BFFIP would allow for an increase in initial and long-term management activities, including pile burning that could result in an incremental GHG emission increase. Increases would be minimal since the vast majority of emissions analyzed under the PEIR were related to broadcast burning (80 percent of the GHG emission), which would not increase under the revisions. Increases from equipment and vehicles used and minor increases in pile burning to treat up to 150 acres under MA-23 versus 60 acres, would be incrementally small compared with the total impact analyzed under the BFFIP PEIR, even though exceedances would still occur as previously found in the PEIR.

Implementation of the revised BFFIP could still conflict with the 2017 CAP because GHG emissions would exceed the BAAQMD significant thresholds for GHG; however, management of District lands would reduce the likelihood of a catastrophic fire. It is expected that a wildfire

on District lands would have many times greater GHG emissions than BFFIP activities. It is anticipated that an increase in the long-term maintenance activities would reduce the overall level of effort required annually over time and GHG emissions would not exceed the District's GHG emission reduction goals. The revised BFFIP would also continue to require adherence to MM Air-1 to minimize air pollutant emissions. The revised BFFIP would not result in new or substantially more severe impacts to greenhouse gas emissions than those analyzed in the certified BFFIP PEIR.

## 3.9 Hazards and Hazardous Materials

### 3.9.1 Hazardous Materials

The BFFIP PEIR analysis concluded less than significant impacts with mitigation to hazards and hazardous materials. Under the revised BFFIP, no changes to conditions would occur that could result in an impact on hazardous materials related to contaminated sites. The certified BFFIP PEIR identified one site as having potential for existing contamination. Implementation under the revised BFFIP will continue to require adherence to MM Hazards-2, which requires avoidance of all former buildings and facilities associated with the contaminated site unless remediated and no hazardous materials remain.

The revised BFFIP would allow for an increase in initial and long-term management activities that involve the use of vehicles and equipment under MA-23, which could result in the leakage or spillage of fuels. The revised BFFIP would also allow for an increase in pile burning activities that require the use of drip torches, which could also leak fuel, but would be very small quantities. The revised BFFIP would not change the types of management activities that were allowed under the adopted BFFIP and analyzed under the PEIR, and would continue to require adherence to MM Hazards-1, which requires the District to implement spill prevention and response best management practices; therefore, the revised BFFIP would not result in new or substantially more severe impacts to hazardous materials than those analyzed in the certified BFFIP PEIR.

### 3.9.2 Hazards

The BFFIP PEIR analysis found the BFFIP would have a beneficial effect with regard to reducing wildfire risks or the size and spread of wildfires. Increased risks were identified related to wildfire ignition and spread during the actual performance of work, which requires the use of vehicles and equipment that could ignite a fire through generation of sparks or heat. A discussion on interference with an adopted emergency response plan or emergency evacuation plan is provided in subsection 3.20: Wildfire. No changes with respect to other hazards would occur under the revised BFFIP that could lead to a significant impact.

The revised BFFIP would allow for an increase in management activities under MA-23, including potential increases in pile burning and equipment. Total acres of broadcast burning per year would not change. Actions under the BFFIP would continue to be required to adhere to

MM Air-4, MM Hazards-1, MM Hazards-3, MM Hazards-4, MM Hazards-5, MM Hazards-6, and MM Hazards-7. MM Hazards-1 requires the District to implement spill prevention and response best management practices. MM Air-4, MM Hazards-3, MM Hazards-4, and MM Hazards-5 stipulate when and where pile burning should occur, a buffer between structures and the broadcast burn, closure of District-use-only roads, and preparation of a Prescribed Burn Plan. Revisions to Hazards-5 were made to clarify road and trail closures if determined necessary, as well as adherence to the Burn Plan, which continues to mitigate effects. MM Hazards-6 requires propane flaming training to minimize the risk of fire. MM Hazards-7 would be implemented to ensure that appropriate precautions, including maintaining fire suppression equipment in work vehicles and prohibiting smoking. Therefore, the revised BFFIP would not result in new or substantially more severe impacts to hazards than those analyzed in the certified BFFIP PEIR.

## 3.10Hydrology and Water Quality

### 3.10.1 BFFIP Summary

The BFFIP PEIR analysis concluded less than significant impacts with mitigation to hydrology and water quality related to violation of water quality standards or discharge requirements, substantial erosion or siltation as a result of altering existing drainage patterns, and conflict with or obstruction of implementation of a water quality control plan or sustainable groundwater management plan. The BFFIP PEIR analysis concluded less than significant impacts to substantially increasing the rate or amount of surface runoff in a manner that would result in flooding or exceed capacity of existing or planning stormwater drainage systems. The BFFIP Initial Study concluded no impact and less than significant impacts related to the following topics: flooding from implementation of the plan; impacts from seiches, tsunamis, or mudflows; and groundwater supplies; therefore, these topics were not evaluated further within the BFFIP PEIR.

### 3.10.2 Water Quality Standards

The revised BFFIP would result in an increase in initial and long-term management activities annually under MA-23 that would result in some minor modifications to the hydrologic condition in the plan area, similar to the adopted BFFIP. No additional management action types are proposed, and all work performed under the revised BFFIP would continue to adhere to MM Geology-1, MM Geology-2, MM Geology-3, MM Hydrology-1, and MM Hazards-1. MM Geology-1, MM Geology-2, and MM Geology-3 require implementation of several erosion control measures to avoid sedimentation of waterways or waterbodies, steep slopes, and existing erosional features or erodible soils. MM Hydrology-1 requires use of waterway and bank protection and restoration measures to ensure the waterway is not impacted by sedimentation and siltation that could impact water quality. MM Hazards-1 requires the District to implement spill prevention and response best management practices, such as proper techniques for storage of hazardous materials, daily inspections of equipment, and emergency spill supplies for use should a spill occur. Therefore, the revised BFFIP would not result in new

or substantially more severe impacts to water quality standards than those analyzed in the certified BFFIP PEIR.

### 3.10.3 Alteration of Existing Drainage Pattern

Under the revised BFFIP, no changes to conditions would occur that could result in an impact on hydrology and water quality related to the alteration of an existing drainage pattern, including substantially increasing the rate or amount of surface runoff resulting in flooding, exceeding the capacity of exiting or planning stormwater drainage systems, or impede or redirect flows. Similar to the adopted BFFIP, the revisions to the BFFIP do not include the construction of any new roads or culverts, and none of the proposed management actions would include major alterations of a stream or watercourse. The revised BFFIP would not result in new or substantially more severe significant impacts to hydrology and water quality related to the alteration of an existing drainage pattern than those analyzed in the BFFIP PEIR, even with a minor increase in acreages treated under MA-23 or consolidation of management actions to treat broom under MA-20.

### 3.10.4 Conflict with a Water Quality Control Plan or Groundwater Management Plan

Implementation of the BFFIP could impact water quality of waterbodies on and downstream from District lands but was found mitigable. Implementation under the revised BFFIP would increase the amount of areas treated under MA-23, but implementation would continue to abide by MM Geology-1, MM Geology-2 and MM Geology-3, MM Hydrology-1, and MM Hazards-1. MM Geology-1, MM Geology-2, and MM Geology-3 that require implementation of several erosion control measures to avoid minimize erosion associated with grazing, sedimentation of waterways or waterbodies, steep slopes, and existing erosional features or erodible soils. MM Hydrology-1 requires that instream crossings be avoided to the greatest extent feasible. Where instream crossings cannot be avoided, MM Hydrology-1 requires that instream crossings occur when the stream is dry, with no alteration to the stream bed and bank, unless a Section 1600 and potentially a Section 404 permit is obtained, with restoration of the area after work is completed to compensate for impacts. MM Hazards-1 requires the District to implement spill prevention and response best management practices, such as proper techniques for storage of hazardous materials, daily inspections of equipment, and emergency spill supplies for use should a spill occur. Therefore, the revised BFFIP would not result in new or substantially more severe significant impacts to hydrology and water quality related to a conflict with a water quality control plan or groundwater management plan than those analyzed in the BFFIP PEIR.

## 3.11Land Use and Planning

The BFFIP Initial Study concluded no impact on land use and planning and this topic was not evaluated further within the BFFIP PEIR. Under the revised BFFIP, no changes to conditions would occur that could result in an impact on land use and planning. The revised BFFIP would not result in new or substantially more severe significant impacts on land use and planning than those analyzed in the BFFIP PEIR.

## 3.12Mineral Resources

The BFFIP Initial Study concluded no impacts to mineral resources and this resource topic was not evaluated further within the BFFIP PEIR. Similar to the adopted BFFIP, the revised BFFIP would not involve any activities that would permanently impede mineral recovery. The revised BFFIP would not result in new or substantially more severe significant impacts on mineral resources than those analyzed in the BFFIP PEIR.

## 3.13Noise

The BFFIP PEIR found that mechanical vegetation removal and trimming using powered equipment are the primary techniques within the adopted BFFIP that could generate substantial noise. The BFFIP PEIR found that broadcast burning could generate some noise, but the revisions do not increase the acreage or amount of broadcast burning that could occur. The BFFIP PEIR found that manual techniques for vegetation removal would not generate much noise and would have minimal impacts related to noise. All of the impacts could be mitigated to less than significant levels.

Revised actions under the BFFIP could change the location and total acreages treated but would not change the methods used. As discussed in the BFFIP PEIR, mechanical methods would emit noise levels in excess of 70 dBA but would not occur at a sensitive receptor location or at this level for more than 5 days within a 30-day period at one sensitive receptor location. Under the revised BFFIP, an increase in ambient noise levels above existing levels could still occur but would be temporary and geographically isolated to one specific location. Activities taken under the revised BFFIP would continue to be required to adhere to MM Noise-1, which requires that work in proximity of a sensitive receptor only occurs Monday through Friday from 7 a.m. to 6 p.m. and Saturdays from 9 a.m. to 5 p.m. with not work allowed on Sundays or holidays. MM Noise-1 also requires that a disturbance coordinator is designated and stationed at the work site to address noise complaints and to ensure measures are implemented to minimize noise disturbance (only applicable if working in close proximity to a sensitive receptor). The measure also requires that the appropriate buffer distances are established when operating certain types of equipment near sensitive receptors. Stationary equipment, such as a wood chipper, should be placed as far from sensitive receptors as possible, duration of operation should be minimized, work should be performed when classes are not occurring in schools, and noise barriers, such as acoustic blankets, should be installed, if necessary, to keep noise levels below 70 dBA. Therefore, the revised BFFIP would not result in new or substantially more severe impacts to noise associated with manual or mechanical techniques for vegetation removal than those analyzed in the certified BFFIP PEIR.

The revision of MM Air-3, which allow for the distance between broadcast and pile burns and sensitive receptors to be 1,000 feet *or the distance specified in the Smoke Management Plan* and the revision to MM Air-4, which could allow recreationalist within 500 feet, *depending on the Burn Plan and/or Incident Action Plan,* could result in noise receptors being closer than 500 feet to a prescribed pile or broadcast burn. It is highly unlikely any recreationists or other stationary

sensitive receptors such as residents would be allowed within 200 feet of a prescribed burn activity. At 180 feet, equipment noise associated with prescribed burning would dissipate to less than 70 dBA. Noise-1 ensures that the appropriate buffer distances are established when operating certain types of equipment near sensitive receptors, which would also ensure equipment is 180 feet or more away from sensitive receptors during prescribed burns.

## 3.14Population and Housing

The BFFIP Initial Study concluded no impacts to population and housing and this resource topic was not evaluated further within the BFFIP PEIR. Similar to the adopted BFFIP, the revised BFFIP would not introduce elements that would allow for the addition of homes or businesses, or the infrastructure needed to induce population growth. The revised BFFIP would also not involve the replacement or removal of existing housing and would not result in the displacement of people. Because the revised BFFIP would not change the conditions that could result in an impact on population and housing, the revised BFFIP would not result in new or substantially more severe significant impact related to population and housing than those analyzed in the BFFIP PEIR.

## 3.15Public Services

The BFFIP Initial Study concluded no impacts to public services and this resource topic was not evaluated further within the BFIP PEIR. The revised BFFIP would not require the provision of new or physically altered fire protection facilities. Similar to the adopted BFFIP, prescribed burning presents a potential need for fire protection services should the burning become uncontrolled. It is possible that pile burns would increase with the implementation of the revised BFFIP; however, it is not anticipated that additional fire control resources and personnel would be needed outside of the existing facilities and local fire protection agencies already in coordination with the District under the adopted BFFIP, as the number of piles burned at any one time would be similar to that analyzed under the BFFIP PEIR. Therefore, the revised BFFIP would not result in a new or substantially more significant impact on public services related to fire protection.

The revised BFFIP would also not increase service ratios for police services, schools or other public facilities provided in the area. Because the BFFIP and BFFIP PEIR would not change the conditions that could result in new or more severe significant impact related to police services, schools or other public facilities provided in the area, the revised BFFIP would not result in new or substantially more severe significant impact related to police service ratios, schools, or other public facilities than those analyzed in the BFFIP PEIR.

The revised BFFIP would continue to allow vegetation removal activities such as prescribed burns and the use of heavy equipment that could impact recreational use by requiring the temporary closure of areas to recreational users or by adversely affecting the natural quality of the area that attracts recreational users. The revised BFFIP may also increase the quantity of

vegetation removal activities in a year or the acreage of an individual activity under MA-23; however, due to the scale of the isolated vegetation removal activities compared to the overall size of the District's recreational lands and the temporary nature of the activities, the marginal increase that could occur would not result in a new or substantially more sever significant impact related to access to recreational public facilities. The revised BFFIP includes minor clarifications to MM Hazard-5 that the road and trail closures would be required if determined to be necessary in accordance with the burn-specific Plan and/or Incident Action Plan, which would likely result in fewer trail and road closures as closures would only occur as necessary.

## 3.16Recreation

The BFFIP PEIR analysis concluded less than significant impacts with mitigation on recreation with mitigation. Implementation of actions under the revised BFFIP would continue to require MM Recreation-1, which would include temporary closure of roads or trails during maintenance activities for protection and safety of recreationists. The revised BFFIP may increase the quantity of vegetation removal activities in a year or the acreage of an individual activity that could incrementally increase the number of days a particular road or trail may be closed within a year (under MA-20 or MA-23); however, this increase would be marginal and insignificant considering the 210 miles of trails and roads that are available to recreationalists within the District land and the temporary nature of the activities.

While the revisions to the BFFIP do not include increasing the acres treated with broadcast burning per year, the management action and measures include minor clarifications, including to MM Hazards-5. MM Hazards-5 requires closure of trails and District-use only roads within 500 feet of the outermost edges of the broadcast burn during activities. Revisions to MM Hazards-5 include additional clarification that the closures would be required if determined to be necessary in accordance with the burn-specific Burn Plan and/or Incident Action Plan. The revision of MM Hazards-5 could potentially result in recreationists or drivers within 500 feet of the outermost edge of the broadcast burn during activities if determined to be in compliance with the burn-specific Burn Plan and/or Incident Action Plan; however, the burn-specific Burn Plan and/or Incident Action Plan requires certain measures be taken under controlled environmental conditions to achieve clearly articulated management goals. Measures include monitoring environmental conditions before and during management actions such as wind speed and direction and smoke management.

Although the potential increase in the various restoration and treatment activities annually could also impact the experience of recreationalists due to the anticipated change in visual character of the area, the result of the potential increase would be similar to existing conditions under the adopted BFFIP as the physical aesthetic change would last for one growing season before bloom of fire-follower wildflowers and other seedlings.

The revised BFFIP would also not change the type of vegetation maintenance activities prescribed under the adopted BFFIP PEIR. The revised BFFIP would continue current

management practices of cutting charred skeletons of stems and branches post prescribed burn activities. Signs of prescribed burns and other vegetation maintenance activities would continue to be temporary in a given area under the revised BFFIP. Therefore, the revised BFFIP would not result in a new or substantially more severe impact related to recreation.

## 3.17Transportation

The BFFIP PEIR analysis concluded less than significant impacts with mitigation on transportation related to inadequate emergency access and an increase in hazards due to a design feature or incompatible use. The BFFIP PEIR analysis concluded less than significant impacts related to CEQA Guidelines section 15064.3, subdivision (b) for vehicle miles traveled (VMT). As analyzed under the BFFIP PEIR, the revised BFFIP would continue to require temporary lane or full road closures during vegetation maintenance activities.

Actions under the revised BFFIP may also increase the quantity of vegetation removal activities in a year or the acreage of an individual activity that could result in an increase in road or lane closures required annually (under MA-20 or MA-23). The revised BFFIP would continue to require MM Transportation-1, which requires the District make provisions to be able to create access for emergency responders across any work site, as well as requires the road guards be equipped with two-way radios to inform the crew to cease operations to reopen the road for emergency vehicles should an emergency event occur. Similar to the adopted BFFIP, the revised BFFIP does not include any actions to redesign, modify, or maintain any roads or intersections, and it would not change the use of any existing roadways. The revised BFFIP would also not change the conditions that could result in a new or substantially more severe impact related to incompatible uses of roadways between public motorists, hikers, bicyclists and recreationalists who may travel on the same roads that are being used by heavy equipment and District authorized vehicles. The revised BFFIP would not change the type of vegetation maintenance activities prescribed under the adopted BFFIP.

Implementation of activities under the revised BFFIP would continue to require a Traffic control Plan in accordance with MM Hazards-4, if required. In regard to VMT, any District activities that would occur simultaneously under the revised BFFIP, would not be anticipated to be greater than 110 vehicle trips per day, which is the Office of Planning and Research's screening threshold identified within the certified BFFIP PEIR. Therefore, the revised BFFIP would not result in new or substantially more severe significant impact related to transportation than those analyzed in the BFFIP PEIR.

## 3.18Tribal Cultural Resources

Tribal Cultural Resources was not analyzed under its own section within the certified BFFIP PEIR, but was incorporated within the BFFIP PEIR section 3.4: Cultural and Tribal Cultural Resources. The BFFIP PEIR analysis concluded less than significant impacts with mitigation on tribal cultural resources. Similar to the adopted BFFIP, the revised BFFIP has the potential to

significantly impact known and previously undiscovered archaeological resources during removal of medium and large vegetation with mechanical equipment and during prescribed burning, with a slight incremental increase in likelihood given increases in acreage treated under MA-23. Any prehistoric resources eligible for listing in the CRHR, could be considered a tribal cultural resource as well. The revised BFFIP would continue to require adherence to MM Cultural-1, MM Cultural-2, MM Cultural-3, and MM Cultural-4 which require trainings to workers on archaeological and historic resource identification and sensitivity, review of maps identifying cultural resource locations by District trained staff prior to conducting activities, cessation of work within 165 feet of a previously undiscovered cultural resource and avoidance or treatment of the resource, and halt work within 165 feet of the discovery and to contact the Marin County's Coroner's office followed by an appointment with the Most Likely Descendant to determine the appropriate course of action.

The certified BFFIP PEIR discusses input obtained from the Federal Indians of the Graton Rancheria and the importance of prehistoric trails used by the Federal Indians of the Graton Rancheria ancestors throughout the watershed. Similar to the adopted BFFIP, the revised BFFIP would not involve major alterations of land or the construction of built structures. No new management activities have been incorporated into the revised BFFIP and the previously identified management activities would be required to comply with the previously identified mitigation measures. MM Cultural-2 required the trails that were identified by the Federal Indians of the Graton Rancheria tribe be included within the District's GIS database of cultural resources. Therefore, the revised BFFIP would not result in new or substantially more severe significant impact related to tribal cultural resources than those analyzed in the BFFIP PEIR.

## 3.19Utilities and Service Systems

The BFFIP Initial Study concluded no impacts to utilities and service systems for the exception of sufficient water supplies which was determined to be less than significant. Utilities and service systems was not evaluated further within the BFIP PEIR. Similar to the adopted BFFIP, the revised BFFIP would not generate wastewater nor cause a violation of wastewater treatment requirements. The revised BFFIP would also not require or result in the construction of new water, wastewater, or stormwater treatment facilities or require the expansion of existing facilities. The revised BFFIP would increase management activities that would include vegetation clearing that requires disposal under MA-23. Landscape debris would not be taken to a landfill and thus would not cause a landfill to exceed capacity.

The revised BFFIP would increase management activities including pile burning (but not broadcast burning) that would use water for emergency use. Water would also continue to be used for dust suppression. Water would be used as needed for management activities and would not constitute a substantial increase compared to the adopted BFFIP. The water needed to implement the revised BFFIP would be minimal compared to the available supply; therefore, no new or expanded entitlements would be needed. Therefore, the revised BFFIP would not

result in new or substantially more severe significant impact related to utilities and service systems than those analyzed in the BFFIP PEIR.

# 3.20Wildfire

## 3.20.1 Summary of PEIR

Wildfire was not analyzed under its own section within the certified BFFIP PEIR but was incorporated within the BFFIP PEIR section 3.7: Hazardous Materials and Fire Hazards. The BFFIP PEIR analysis concluded less than significant impacts with mitigation on wildfire.

## 3.20.2 Impair or Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan

Under the revised BFFIP, no changes to conditions would occur that could result in impairing the implementation of or physically interfering with an adopted emergency response plan or emergency evacuation plan. No emergency response or evacuation plans have been adopted for the roads in the BFFIP lands.

## 3.20.3 Expose Project Occupants to Pollutant Concentrations

The revised BFFIP proposes the increase in initial and long-term management activities that could increase the risk of wildfire ignition under MA-23; however, activities under the revised BFFIP would still be required to adhere to MM Hazards-1, MM Hazards-3, MM Hazards-4, MM Hazards-5, MM Hazards-6, MM Hazards-7, and MM Air-4. MM Hazards-1 that requires the District to implement spill prevention and response best management practices. MM Air-4, MM Hazards-3, MM Hazards-4, and MM Hazards-5 stipulate when and where pile burning should occur, a buffer between structures and the broadcast burn, closure of District-use-only roads, and preparation of a Prescribed Burn Plan. MM Hazards-6 requires propane flaming training to minimize the risk of fire. MM Hazards-7 would be implemented to ensure that appropriate precautions, including maintaining fire suppression equipment in work vehicles and prohibiting smoking. Similar to the adopted BFFIP, the management actions implemented as part of the revised BFFIP would reduce the wildlife risk in the BFFIP area as well as the size, intensity, and spread of wildfires, were one to break out. Changes to MM Hazards-5 add clarification to when road and trail closures are needed and adherence to a Burn Plan and continue to mitigate effects. Therefore, the revised BFFIP and would not result in new or substantially more severe significant impacts to wildfire related to exposing project occupants to pollutant concentrations than those analyzed in the BFFIP PEIR.

## 3.20.4 Installation or Maintenance of Infrastructure

The revised BFFIP includes potential additional maintenance of broom in fuelbreaks since it consolidates broom treatment across fuelbreaks and WAFRZs. Under the revised BFFIP, no changes to conditions would occur that could result in an impact to wildfire related to fuelbreaks or other installation or maintenance of infrastructure. Therefore, the revised BFFIP

would not result in new or substantially more severe significant impacts to wildfire related to installation or maintenance of infrastructure than those analyzed in the BFFIP PEIR.

### 3.20.5 Significant Wildfire Risks

Under the revised BFFIP, no changes to conditions would occur that could result in an impact to wildfire related risks, including downslope or downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes. Therefore, the revised BFFIP would not result in new or substantially more severe significant impacts to wildfire related to installation or maintenance of infrastructure than those analyzed in the BFFIP PEIR.

## 3.21Other CEQA Topics

### 3.21.1 Changes in Land Use that Commit Future Generations

The revised BFFIP would not result in a change to the zoning or land use designations. The revised BFFIP would not commit future generations to significant changes in land use. All impacts are consistent with those analyzed in the BFFIP PEIR.

### 3.21.2 Consumption of Non-Renewable Resources

Non-renewable resources include mineral resources, groundwater, and fossil fuels. Similar to the adopted BFFIP, the revised BFFIP would not involve any activities that would permanently impede mineral recovery and would not require the use of substantial groundwater from the District area.

The revised BFFIP would require the use of fossil fuels for management activities, including the use of mechanical tools and equipment and prescribed burns. Use of vehicles and equipment during these activities and to reach project sites would also use fossil fuels. The revised BFFIP would use fossil fuels intermittently throughout the year, but would not require continued use. In addition, the use of fossil fuels would be considered beneficial, necessary, and not wasteful as discussed under subsection 3.6: Energy.

### 3.21.3 Irreversible Damage from Environmental Accidents

Action proposed under the revised BFFIP would involve use of equipment and vehicles, which could result in the accidental spill of hazardous materials such as diesel and gasoline, similar to the adopted BFFIP. The revised BFFIP could also allow for a small increase in pile burning activities associated with increases in acres treated under MA-23 that require the use of drip torches, which could also leak fuel, but would be very small quantities. The revised BFFIP would not change the types of management activities that were allowed under the adopted BFFIP and would continue to adhere to MM Hazards-1 which requires the District to implement spill prevention and response best management practices; therefore, the revised BFFIP would not result in irreversible damage from environmental accidents.

### 3.21.4 Growth-Inducing Impacts

Similar to the adopted BFFIP and as analyzed under the BFFIP PEIR, the revised BFFIP does not involve the construction of housing and would not directly contribute to population growth in the area. In addition, the revised BFFIP does involve the expansion of infrastructure, such as roadways or sewer lines and it does not involve the construction of a new facility that would indirectly induce population growth. Therefore, the revised BFFIP would not result in new or substantially more severe significant impacts related to growth-inducing impacts than those analyzed in the BFFIP PEIR.

# 4 Determination

No new or substantially more severe significant impacts would occur as a result of the revised BFFIP. No new substantial changes would occur with respect to the circumstances under which the revised BFFIP and BFFIP PEIR would be undertaken. The mitigation measures and determination of significance for impacts included in the certified BFFIP PEIR would continue to be valid. None of the conditions described in CEQA Guidelines Section 15162 requiring the preparation of a subsequent EIR or CEQA Guidelines Section 15163 requiring preparation of a supplemental EIR have occurred. This addendum to the adopted BFFIP PEIR is the appropriate level of environmental review for the project revisions, as identified in CEQA Guidelines Section 15164.

# 5 References

Marin Water District. (2019, October 15). *Meetings & Events, Board of Directors, Oct 15, 2019 at 07:30 pm - Oct 15, 2019 at 08:30 pm, 1. Audio*. Retrieved from Marin Water : https://www.marinwater.org/node/452

Panorama Environmental, I. (October 2019). *Marin Municipal Water District Final Program Environmental Impact Report for the Biodiversity, Fire, and Fuels Integrated Plan.* Marin Water District.

# APPENDIX A UPDATE TO THE MITIGATION, MONITORING, AND REPORTING PROGRAM

# 4 MITIGATION MONITORING AND REPORTING PROGRAM

## 4.1 INTRODUCTION

When approving projects with mitigation measures that if implemented would avoid or lessen significant impacts, CEQA requires public agencies to adopt monitoring and reporting programs or conditions of project approval to mitigate or avoid the identified significant effects (Public Resources Code Section 21081.6(a)(1)). A public agency adopting measures to mitigate or avoid the significant impacts of a proposed project is required to ensure that the measures are fully enforceable, through permit conditions, agreements, or other means (Public Resources Code Section 21081.6(b)). The mitigation measures required by a public agency to reduce or avoid significant project impacts not incorporated into the design or program for the project may be made conditions of project approval as set forth in a Mitigation Monitoring and Reporting Program (MMRP), detailed in Table 4.3-1. The program must be designed to ensure project compliance with mitigation measures during project implementation. The District will use the Project Environmental Review Checklist, provided in Appendix A of this Final EIR, to evaluate if impacts of individual projects are covered in the Program EIR and to identify best management practices and mitigation measures that are applicable to those individual projects. Individual projects that do not conform to the scope of the Program EIR may require additional environmental analyses.

## 4.2 FORMAT

This MMRP is organized in a table format, keyed to each significant impact and mitigation measure.. Each mitigation measure is set out in full, followed by a tabular summary of monitoring requirements. The column headings in the tables are defined as follows:

- **Mitigation Measure.** This column presents the significant impact and full mitigation measure.
- **Implementation Responsibility.** This column assigns the party responsible for implementation of the measures
- **Monitoring Responsibility.** This column assigns the party responsible for monitoring implementation.
- **Timing and Performance Standards:** Identifies at which stage of the project, mitigation must be completed. Performance standards are identified that must occur during the specified stage of project implementation to determine that the objectives of the mitigation are met.

## 4.3 ENFORCEMENT

This MMRP will be incorporated as a condition of project approval. All mitigation measures must be carried out to fulfill the requirements of approval.

## Table 4.3-1 Biodiversity, Fire, and Fuels Integrated Plan Mitigation, Monitoring, and Reporting Program

| Best Management Practice and Mitigation Measure | Implementation Responsibility | Monitoring Responsibility | Applicable Locations | Timing and Performance Standards | Compliance Verification |
|---|---|---|---|---|---|
| **Air Quality** | | | | | |
| **Impact Air-1**<br>**MM Air-1: Broadcast Burn Emission Minimization Measures**<br>Methods for reducing air pollutant emissions shall include one or more of the following:<br>• Reducing the broadcast burn areas in each year.<br>• When considering different types of prescribed burning projects, weigh the habitat benefits of burning in a particular fuel type against the emissions. With all other considerations being equal, choose lower emissions fuel types (such as grasslands versus hardwood or evergreen forest) for prescribed burning projects. | Contractor | The District | Where broadcast burns could occur. | **Before Activity:** (1) Reduce the acreage of broadcast burn, (2) Choose habitat types with fewer emissions, when other considerations are equal' (3) Reduce the fuel load in the forest understory<br>**During Activity:** (1) Burn when the fuel has lower moisture, (2) Minimize fire duration<br>**After Activity:** Quickly mop up | |
| **Impact Air-2**<br>**MM Air-2: Asbestos Management**<br>Prior to conducting any activities requiring use of mechanical equipment (e.g., skid steer loader, backhoe) or off-road access of a project site, consult the map created using GIS that shows where serpentine soils and rock formations are located. If the project site or temporary access route passes through an area with serpentine soils or rock formations, implement the asbestos management measures (below).<br>Prior to conducting any activities requiring manual soil-disturbing activities (e.g., pulling of small vegetation, planting seedlings), consult the GIS that shows where serpentine soils are located. If the project site is in an area with serpentine soils, implement the asbestos management measures (below).<br>Asbestos Management Measures:<br>• Areas known to have asbestos shall be watered during ground-disturbing activities (e.g., pulling of medium to large vegetation, digging large holes for planting) to ensure that the soil remains moist during the extent of the activity.<br>• Vehicle speeds on unpaved roads shall be limited to 15 miles per hour.<br>• When mowing in serpentine soils, the mower head shall be set at least 6 inches above the ground to minimize asbestos dust generation. If when mowing, dust is seen from the mower pluming more than 4 feet above the ground surface, the mower shall be adjusted to the minimum height needed to avoid generating dust plumes. | Contractor | The District | Areas with serpentine soils or rock formations where work could occur. | **Before Activity:** Water areas with serpentine soils or exposed rock formations<br>**During Activity:** Limit vehicle speeds<br>**After Activity:** N/A | |
| **Impact Air-2**<br>**MM Air-3: Minimization of Air Pollutant Risk**<br>The District shall require that prescribed burns on its lands are conducted a minimum of 1,000 feet away from sensitive receptors, specifically residences, schools, and childcare centers~~.~~ or the distance specified to avoid smoke impacts to sensitive receptors in the Smoke Management Plan, as required under BAAQMD Regulation 5.<br>The District shall require that prescribed burns on its lands are managed to reduce District worker exposure to CO concentrations and other air pollutants through implementation of the following measures:<br>• Use of realtime CO monitors<br>• Rotate personnel out of heavy smoke areas<br>• Avoid burning heavy fuel loads on the ground, such as large logs, to avoid additional mop-up | Contractor | The District | Where broadcast and pile buns could occur. | **Before Activity:** (1) Purchase realtime CO monitors, (2) Purchase respirators and filters tested and approved by NIOSH<br>**During Activity:** (1) Provide realtime CO monitor to firefighters, (2) Rotate firefighters out of heavy smoke areas, (3) Avoid burning of areas with heavy fuel loads, (4) Provide appropriate respirators and filters to firefighters<br>**After Activity:** N/A | |

| Best Management Practice and Mitigation Measure | Implementation Responsibility | Monitoring Responsibility | Applicable Locations | Timing and Performance Standards | Compliance Verification |
|---|---|---|---|---|---|
| • Tested and approved by NIOSH full-face and half-face air purifying respirators shall be equipped with filters for CO, formaldehyde, acrolein, and respirable particulate matter and available at all times for District staff or contractors working in the immediate vicinity of broadcast and pile burns,<br>• Or otherwise follows the requirements of relevant regional, state, and federal laws pertaining to human health during prescribed burning. | | | | | |
| **Impact Air-2**<br>**MM Air-4: Smoke Management Plan**<br>Key considerations for broadcast and pile burns include, fuel, wind, relative humidity, air temperature, soil moisture, slope of the burn area, smoke management, and neighbouring land owners. A Smoke Management Plan and Prescribed Burn Plan (in accordance with MM Hazards-4) address the specifics related to these key factors. The District shall prepare a Smoke Management Plan in accordance with BAAQMD's Regulation 5 for all prescribed burns. The Smoke Management Plans shall be implemented for each burn. The Smoke Management Plan shall include all conditions and information detailed in Regulation 5, including the following:<br>• Burns shall not be ignited or fueled during calm conditions when winds are less than 5 miles per hour (mph) except for crossfiring, or when the wind direction at the site shall be such that the direction of smoke drift is toward a populated area in order to minimize local nuisances caused by smoke and particulate fallouts.<br>• Burns shall not be ignited or fueled when winds are more than 15 mph (NRCS, 2012).<br>• Burns shall not be ignited or fueled when wind direction blows towards populated areas.<br>• Identify the contingency actions that would be taken if a burn unexpectedly impacts sensitive receptors, identifiable by smoke complaints or presence of smoke in areas with receptors. Contingency actions include:<br>– halting ignition, suppressing fire, and/or beginning immediate mop up. | The District and Contractor | The District | Where broadcast and pile buns could occur. | **Before Activity:** Prepare a Smoke Management Plan including all identified details<br>**During Activity:** Implement the Smoke Management Plan<br>**After Activity:** N/A | |
| **Impact Air-2:** Implement Mitigation Measure MM Hazards-5 (see below) | | | | | |
| **Impact Air-3:** Implement Mitigation Measure MM Air-1 (see above) | | | | | |
| **Impact Air-Cumulative:** Implement Mitigation Measures MM Air-1, MM Air-2, and MM Air-3 (see above) | | | | | |
| **Biological Resources** | | | | | |
| **Impact Biology-1**<br>**BMP-1: Routine Operations and Project/Activity Implementation**<br>District operations encompass a variety of management activities ranging from day-to-day road maintenance to Incident Command emergency situations. The following measures shall be implemented:<br>1. Prior planning may avoid the introduction and/or spread of weed species, such as by:<br>a. Implementing a periodic monitoring program for detecting new weed infestations in highly susceptible locations such as pull outs, railheads, picnic areas, parking lots, and concessionaire locations.<br>b. Defining "zero tolerance" zones in vulnerable, high-risk areas within the watershed which you commit to keeping weed-free through frequent monitoring and weed control efforts.<br>2. Minimize the extent and severity of soil disturbance, by:<br>a. Setting up staging areas and equipment in a way that will minimize soil disturbance and avoid loss of desirable native vegetation. | The District and Contractor | The District | BFFIP Area | **Before Activity:** N/A<br>**During Activity:** (1) Avoid introduction and/or spread of weed species, (2) Minimize soil disturbance, (3) Maintain facilities<br>**After Activity:** N/A | |

| Best Management Practice and Mitigation Measure | Implementation Responsibility | Monitoring Responsibility | Applicable Locations | Timing and Performance Standards | Compliance Verification |
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| b. When working in vegetation types with relatively closed canopies, retaining shade to the extent possible to suppress weeds and prevent their establishment and growth.<br>3. Maintain facilities by implementing the following techniques:<br>a. Maintain long-term staging areas, such as boneyards, dumps, and quarries in weed-free condition if possible, or contain weeds therein. If necessary, treat sites annually for weeds, and assign this duty to an appropriate, trained staff person. Consider ways of hardening these sites, such as deep mulching or scraping and tamping.<br>b. Maintain trailheads, picnic areas, roads leading to trailheads, and other areas of concentrated public use in a weed-free condition. Make high-use recreation areas a high priority for weed detection and eradication if not already heavily infested. | | | | | |
| **Impact Biology-1**<br>**BMP-2: Pre-Work Assessments and Planning**<br>Prevention begins with pre-work assessments and planning. The following are guidelines for general construction and maintenance activities:<br>1. Inspect all potential and current permitted activity sites. Incorporate invasive plant prevention and containment practices such as mowing, flagging or fencing invasive plant patches, designating invasive plant free travel routes and washing equipment. Where possible, avoid permitting activities that would result in the transfer of weed materials from an infested site to a non-infested site. Consider routes of travel, transport, and equipment use and address pathways and spread concerns with permittees.<br>2. Before ground-disturbing activities begin, inventory and prioritize weed infestations for treatment in construction sites and along access routes. Identify what weeds are on site or within the project's vicinity and do a risk assessment accordingly. Control these weed infestations. Ideally, weeds should be managed prior to the planned disturbance to minimize weed seeds in the soil.<br>3. Begin project operations in non-infested areas. Restrict movement of equipment or machinery from weed-contaminated areas to non-contaminated areas.<br>4. Locate and use weed-free project staging areas. Avoid or minimize travel through weed-infested areas, or restrict travel to those periods when spread of seed or propagules is least likely, such as prior to seed development. | The District and Contractor | The District | BFFIP Area | **Before Activity:** Conduct pre-work assessments and planning for construction and maintenance activities.<br>**During Activity:** N/A<br>**After Activity:** N/A | |
| **Impact Biology-1**<br>**BMP-3: Imports: Fills, Rock, Plant Material**<br>Knowing the sources of imported material is critical to prevent the introduction of invasive plants. If a project involves moving plants or soil, consider the following:<br>1. Make sure plants and soil are not contaminated with weed seeds – use a certified weed free source or sterilize soil prior to use.<br>2. When possible, get the plants and soil from the worksite, which is less likely to introduce foreign material.<br>3. Inspect materials at the source to ensure that they are weed-free before transport and use. If sources of sand, gravel, and fill are infested, eradicate the weeds, then strip and stockpile the contaminated material for several years, if possible, to further deplete the soil seed bank. Check regularly for weed re-emergence and treat as needed.<br>4. Maintain stockpiled, non-infested material in a weed-free condition by preventing weed seed contamination with physical barriers and by frequently monitoring and quickly eradicating new weeds prior to seed production. | Contractor | The District | BFFIP Area | **Before Activity:** Import weed-free plants and soil<br>**During Activity:** (1) Maintain stockpile in weed-free condition, (2) Use native fill material, (3) Train staff to identify weeds and inventory weed infestations and schedule them for treatment<br>**After Activity:** (1) Monitor construction sites with imported material annually for at least 3 years fate project completion, (2) Rehabilitate burn sites with seed and mulch, (3) Use native material to revegetate construction sites | |

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| 5. Use fill within the project area, or stockpile clean fill on-site for local use. Dispose of excess excavation or spoils in a way that won't spread weeds within the watershed or to neighbors.<br>6. Work with the weed specialist to develop guidelines for where earth materials can be moved within the watershed.<br>7. For routine purchase of material, such as rock used for drain or road base, work with the weed specialist to evaluate the risk, and if necessary develop a procedure for procuring weed-free material and/or inspecting materials sources.<br>8. Maintain stockpiled, non-infested material in a weed-free condition by preventing weed seed contamination with physical barriers (e.g. tarps) and by frequently monitoring and quickly eradicating new weeds prior to seed production.<br>9. Survey for, document, and treat weeds on construction sites (or wherever fill/material is brought in) annually for at least 3 years after project completion to ensure that any weeds transported to the site are promptly detected and eradicated. For on-going projects, continue to monitor until reasonably certain that weeds will not reappear. Plan for follow-up treatments based on inspection results.<br>10. Seed and mulch to be used for burn rehabilitation or slope stabilization (for wattles, straw bales, dams, etc.) all need to be inspected and certified that they are free of weed seed and propagules. Follow-up inspections of straw treated sites should be performed to insure any undetected source seed are treated.<br>11. Revegetation may include topsoil replacement, planting, seeding, and weed-free mulching as necessary. Use native material to the greatest extent possible. Consider stockpiling chipped local brush or cut and bale local weed-free grass for mulch – an added benefit is that mature seeds in the grass or brush can help restore local vegetation on the site.<br>12. Periodically inspect roads, trails, and rights-of-way for invasive plants. Train staff to recognize weeds and report locations to the local weed specialist. Inventory weed infestations and schedule them for treatment. | | | | | |
| **Impact Biology-1**<br>**BMP-4: Prevent Contamination of Clean Nursery Stock or other Clean Plant materials.**<br>Planting stock shall be protected from potential contamination from the point that it leaves the production nursery or collection site until it has been planted. Note that container nursery stock has a high risk of infection by *Phytophthora* species if exposed to these pathogenic agents. Exclusion of these pathogens provides the only viable option for maintaining nursery plants free of *Phytophthora*.<br>**Maintaining Nursery Stock in a Holding Facility**<br>By definition, nursery stock produced by the District should be free of exotic *Phytophthora* to the maximum degree attainable. If such material is held for a period after delivery and before planting, the following clean nursery practices must be followed to prevent contamination of the nursery stock with *Phytophthora*:<br>1. Water used for irrigating plants shall comply with standards listed below.<br>2. Delivered nursery plants that will be held before planting shall be transferred to cleaned and sanitized raised benches and maintained as described below under Handling and Transporting Nursery Plants BMPs.<br>**Handling and Transporting Nursery Plants**<br>3. Nursery plants shall be transported on or in vehicles or equipment that has been sanitized before loading the stock. Truck beds, racks, or other surfaces will be cleaned (swept, blown with compressed air and/or power washed as needed) to be free of | The District | The District | BFFIP Area | **Before Activity:** N/A<br>**During Activity:** (1) Maintain nursery stock in a holding facility with cleaned and sanitized raised benches, (2) Transport nursery stock with sanitized vehicles or equipment, and place nursery stock clean waterproof surfaces, (3) Use clean water sources for washing, soaking, or irrigation, (4) Use pre-approved materials for mulch, compost, and soil amendment, and inoculants, (5) Use new and uncontaminated irrigation supplies, erosion control fabrics, fencing, stakes, posts, and other planting site inputs<br>**After Activity:** N/A | |

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| soil and plant detritus. Cleaned surfaces shall be sanitized as described below under Procedures for Sanitizing Tools, Surfaces, and Footwear.<br>4. Keep plants in sanitized vehicles or on sanitized carts, trailers, etc. until delivered to their planting sites.<br>5. At the job site, plants shall be handled to prevent contamination until delivered to each planting site. Nursery stock shall not be staged on the soil or other potentially contaminated surfaces except that plants may be placed on the soil surface at their specific planting sites.<br>6. If it is necessary to offload plants at the job site, plants may be placed on clean waterproof plastic tarps or other clean, sanitized surfaces. If tarps are used for holding plants, one surface will be dedicated for contact with nursery stock and will be cleaned and sanitized as needed to maintain phytosanitary conditions.<br>**Other Planting Site Inputs**<br>7. Washing, soaking, or irrigation of plant material shall be conducted using clean water sources as specified below under Clean Water Specifications. Untreated surface waters shall not be used for these purposes.<br>8. Mulch, compost, soil amendments, inoculants, and other organic products shall be pre-approved for use before delivery to the planting site. Materials shall be free of pathogen contamination due to composition, manufacturing conditions, or through effective heat treatment and subsequently handled and maintained in a manner to prevent contamination. If appropriate, testing may be required as specified by the District. At the job site, delivered materials shall be handled to prevent contamination until delivered to each planting site in the same manner specified above under Handling and Transporting Nursery Plants.<br>9. All other materials to be installed at the site shall be of new material that has not been stored in contact with soil, untreated surface waters, or other potentially contaminated materials. This includes irrigation supplies (such as pipe, fittings, valves, drip line, emitters, etc.), erosion control fabrics, fencing, stakes, posts, and other planting site inputs. | | | | | |
| **Impact Biology-1**<br>**BMP-5: Cleaning and Sanitation Required Before Entering Planting Area to Prevent Introducing Contamination from Other Locations**<br>*Phytophthora* contamination can be present in agricultural and landscaped areas, in commercial nursery stock, and in some infested native or restored habitat areas. Contamination can be spread via soil, plant material and debris, and water from infested areas. Arriving at the site with clean vehicles, equipment, tools, footwear, and clothing helps prevent unintentional contamination of the planting site from outside sources.<br>**Vehicles, Equipment, and Tools**<br>1. Equipment, vehicles and large tools must be free of soil and debris on tires, wheel wells, vehicle undercarriages, and other surfaces before arriving at the planting area. A high pressure washer and/or compressed air may be used to ensure that soil and debris are completely removed. Vehicles that only travel and park on paved roads do not require external cleaning.<br>2. Contractors will comply with this provision by demonstrating that the equipment has been cleaned at a commercial vehicle or appropriate truck washing facility<br>3. The interior of equipment (cabs, etc.) must be free of mud, soil, gravel and other debris. Interiors may be vacuumed or washed.<br>4. Small tools and other small equipment (including hoses, quick couplers, hose nozzles, and irrigation wands) must be washed to be free of soil or other contamination and | The District and Contractor | The District | BFFIP Area | **Before Activity:** Clean and sanitize vehicles, equipment, tools, footwear, and clothing before entering planting areas<br>**During Activity:** N/A<br>**After Activity:** N/A | |

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| sanitized as described below in Procedures for Sanitizing Tools, Surfaces, and Footwear.<br>5. Hoses shall be new or previously used only for clean water sources as described below in Clean Water Specifications.<br>**Footwear and Clothing**<br>6. Soles and uppers of footwear must be free of debris and soil before arriving at the planting area. Clean and sanitize footwear as described in Procedures for Sanitizing Tools, Surfaces, and Footwear.<br>7. At the start of work at each new job site, worker clothing shall be free of all mud, soil or detritus. If clothing is not freshly laundered, all debris and adhered soil should be removed by brushing with a stiff brush. | | | | | |
| **Impact Biology-1**<br>**BMP-6: Prevent Potential Spread of Contamination within Planting Areas**<br>*Phytophthora* can also be spread within plantings areas if some portions of the site are contaminated. However, it is not possible to identify every portion of a planting area that contains or is free of *Phytophthora*. Because *Phytophthora* contamination is not visible, working practices should minimize the movement of soil within the planting area to minimize the likelihood of spreading contamination.<br>The District may designate specific portions of a planting area as having high or low risk of contamination. Areas with higher risk of contamination typically include areas adjacent to planted landscaping, areas previously planted with *Phytophthora*-infected stock, areas with existing or recently removed woody vegetation, areas directly along watercourses. Areas with low risk of contamination typically include upland sites with only grassy vegetation or sites where surface soils have been removed.<br>**Worker Training and Site Access**<br>1. Before entering the job site, field workers and contractors shall receive training that includes information on *Phytophthora* diseases and how to prevent the spread of these and other soil borne pathogens by following approved phytosanitary procedures.<br>2. Do not bring more vehicles into the planting area than absolutely necessary. Within the planting area, keep vehicles on surfaced or graveled roads whenever possible to minimize potential for soil movement.<br>3. Travel off roads or on unsurfaced roads should be avoided when such roads are wet enough that soil will stick to vehicle tires and undercarriages.<br>**Especially from Higher to Lower Risk Areas**<br>4. Brush off substantial soil contamination from tools and gloves when moving between successive planting sites to prevent repeated collection and deposition of soil across multiple sites.<br>5. Avoid contaminating clothing with soil during planting operations. Use nonporous knee pads that are cleaned between planting sites if kneeling is necessary.<br>6. When possible, plant nursery stock from a given block in the same local area rather than spreading it widely. If a problem is associated with a given block of plants, it will be easier to detect and deal with it if the plants are spatially grouped.<br>7. Phase work to minimize movement between areas with high and low risk of contamination. Where possible, complete work in low risk areas before moving to higher risk areas. Alternatively, restrict personnel to working in either high or low risk areas exclusively to reduce the need for decontamination. | The District and Contractor | The District | BFFIP Area | **Before Activity:** (1) Any staff, contractors or volunteers performing any work in planting areas shall receive training about *Phytophthora* diseases and other soil borne pathogens, (2) Designate high and low risk contamination areas<br>**During Activity:** (1) Avoid travelling on wet off roads or unsurfaced roads, (2) Clean and sanitize footwear and clothing when moving from higher to lower risk areas, (3) Keep all non-plant materials free of soil contamination<br>**After Activity:** N/A | |

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| 8. Clean soil and plant debris from large equipment and sanitize hand tools, buckets, gloves, and footwear when moving from higher risk to lower risk areas or when moving between widely separated portions of the planting area.<br>9. All non-plant materials to be installed at the site (irrigation equipment, erosion control fabric, fencing, etc.) shall be handled to prevent movement of soil within the site, especially movement from higher risk to lower risk areas. Materials should be kept free of soil contamination by maintaining them in sanitized vehicles or on sanitized carts, trailers, etc., or stockpiling in elevated dry areas on clean tarps until used. | | | | | |
| **Impact Biology-1**<br>**BMP-7: Procedures for Sanitizing Tools, Surfaces, and Footwear**<br>Surfaces and tools should be clean and sanitized before use. Tools and working surfaces (e.g., potting benches) should be smooth and nonporous to facilitate cleaning and sanitation. Wood handles on tools should be sealed with a waterproof coating to make them easier to sanitize. Before sanitizing, removal all soil and organic material (roots, sap, etc.) from the surface. If necessary, use a detergent solution and brush to scrub off surface contaminants. The sanitizing agent may also be used as a cleaning fluid. Screwdrivers or similar implements may be needed to clean soil out of crevices or shoe treads. Brushes and other implements used to help remove soil must be cleaned and sanitized after use. | The District and Contractor | The District | BFFIP Area | **Before Activity:** Clean and sanitize tools, surfaces, and footwear prior to working in planting areas<br>**During Activity:** N/A<br>**After Activity:** N/A | |
| **Impact Biology-1**<br>**MM Biology-1: Worker Training**<br>An environmental training program shall be developed and presented by a qualified biologist to all vegetation management workers before they are allowed to perform work under the BFFIP. The training shall describe special-status species and sensitive habitats that could occur within vegetation management areas, protection afforded these species and habitats, and the avoidance and minimization measures required to avoid and/or minimize impacts on these species and habitats, including maintaining avoidance areas, identification of species for avoidance, and protocols to follow, including protocols for minimizing the spread of invasive species and forest diseases. | Contractor working with qualified biologist | The District | BFFIP Area. | **Before Activity:** (1) This measure would be implemented prior to any staff, contractors or volunteers performing any work under the plan, (2) sign-in sheets for trained staff should be maintained by District staff<br>**During Activity:** N/A<br>**After Activity:** N/A | |
| **Impact Biology-1**<br>**MM Biology-2: Protection of Special-Status Plants**<br>The following measures shall be implemented to protect special-status plants:<br>a. Prior to conducting any vegetation management activity (mechanical or manual removal), prescribed (broadcast and pile) burning, propane flaming, and animal grazing the area shall be reviewed by the District's botanist against the most current mapping data of special-status plant species and habitats. If the work is to occur in in serpentine habitat, within 500 feet of known special-status plant populations, near wetlands, or within other habitats with potential to support special-status plant populations, botanical surveys shall be conducted by a qualified botanist ahead of the planned work. The surveys shall be specific to the species of plants that could occur, must be conducted during a period when the special-status species that could occur in that habitat can be most readily detected (e.g. blooming period), and shall include the entire footprint of the proposed work. Any species identified during surveys shall be added to the GIS of current mapping data. If work is to occur again in the same area within 5 years (e.g., new fuelbreaks or retreatment areas for forestry actions), a new survey is not required.<br>b. For listed species with known rarity or declining populations <u>that could be adversely impacted by treatments,</u> including CRPR Rank 1B, 2, and some rank 4 species that are known rare), as determined and listed below by the MMWD botanical staff~~,~~ the MMWD's botanical staff shall: | The District's botanist and Contractor | The District | Serpentine habitat, within 500 feet of known special-status plant populations, near wetlands, or within other habitats with potential to support special-status plant populations. | **Before Activity:** (1) Check maps for habitat and known occurrences of special-status plants, (2) where applicable, conduct surveys in appropriate season (e.g. blooming season) before work is performed and record in GIS.<br>**During Activity:** (1) Avoid the identified special-status species, (2) Avoid CRPR rank 1B and 2 special-status species or conduct reseeding/replanting<br>**After Activity:** Monitor populations and make adjustment to future maintenance activities, if need. | |

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i. Flag or otherwise demarcate the individual or population to ensure workers avoid the species for no loss of individuals.

ii. Establish a buffer of 100 feet around the individual or population, for species that could be adversely impacted by the treatments.

iii. Require implementation of BMP-1 through BMP-3 for work conducted adjacent to these species to minimize the spread of invasive species.

- Brewer's milk vetch (*Astragalus breweri*)
- Brewer's calandrinia (*Calandrinia breweri*)
- Johnny-nip (*Castilleja ambigua var. ambigua*)
- Marin western flax (*Hesperolinon congestum*)
- Bristly leptosiphon (*Leptosiphon acicularis*)
- Santa Cruz microseris (*Stebbinsoseris decipiens*) *
- Coast rockcress (*Arabis blepharophylla*)
- Pink star-tulip (*Calochortus uniflorus*)
- Thin-lobed horkelia (*Horkelia tenuiloba*)
- Small groundcone (*Kopsiopsis hookeri*)
- Gairdner's yampah (*Perideridia gairdneri ssp. gairdneri*)
- North coast semaphore grass (*Pleuropogon hooverianus*)
- Marin manzanita (*Arctostaphylos virgata*)
- Glory brush (*Ceanothus gloriosus var. exaltatus*)
- Mason's ceanothus (*Ceanothus masonii*)

* This species is likely extirpated

c. For other listed species of CRPR rank 1B or 2 (beyond those identified in part b, above) with the potential to occur on District lands, the following measures shall be implemented for any treatments that could adversely impact the species (per Approaches 2.3 and 2.4 of Chapter 4 of the BFFIP):

i. Perennials:

1) Mark populations in the field with distinct flagging. Ensure that worker training is complete per MM Biology-1.

2) Avoid populations. If mowing cannot be safely performed up to the perimeter of the individuals, or timed for when they are senescent, then hand methods (i.e., hand pulling or use of non-powered or powered hand tools) shall be employed to prevent damage or removal of listed species.

3) Where tree or shrub species must be trimmed, such as Mount Tamalpais manzanita, follow any protocols or recommendations available, ~~such as~~ including the following the *Status and Management Recommendations for Arctostaphylos virgata (Marin Manzanita) in Point Reyes National Seashore* (Parker, 2007) and plant specific pruning tips (Las Pilitas Nursery, 2012) and perform the work by hand.

4) No net loss of a~~n annual~~ perennial special-status species can occur. The population size shall be determined from the most recent survey data of the species.

If an individual or population must be removed, one or two options can be employed (subject to CDFW approval) and monitoring conducted to ensure that no net loss of the species occurs.

- (1) The individual or population can be dug up and relocated to appropriate habitat outside the work area. (2) A nursery with experience growing special-status plants can be employed to grow seedlings of the species that shall be

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| planted in appropriate habitat outside the work area or in the work area following completion of work. If located outside the work area, appropriate habitat shall be within the same watershed as the impact area, and shall be identified or approved of by MMWD botanical staff.<br>• A monitoring plan shall be developed that details the following components. Conduct annual monitoring of seeded or replanted locations for a minimum of 3 years and up to 5 years, dependent upon the MMWD botanical staff recommendation and monitoring results. If the new population is not matching the pre-removal population data, more seeding or planting shall be conducted until pre-removal population is met.<br>ii. Annuals:<br>1) Flag or otherwise demarcate and ensure workers avoid the species as feasible; or,<br>2) Time vegetation management activities for when the special-status species occurring in the work area is senescent and/or after the seed has set.<br>3) Monitor populations between vegetation management activities to ensure that population sizes are not decreasing. If populations are decreasing and a correlation can be made to the maintenance activities, measures shall be identified by MMWD botanical staff and taken to improve the population, including but not limited to one of the following: avoiding the area in question or altering the management activity frequency.<br>4) No net loss of an annual special-status species can occur. Due to the variations in population from year to year as a result of weather fluctuations, average population data can be calculated from several years of data collected during the annual census conducted by MMWD or by volunteers as directed by MMWD.<br>5) If an individual or population must be removed, one or two options can be employed and monitoring conducted to ensure that no net loss of the species occurs.<br>• (1) Seeds of the annuals shall be collected from existing on-site populations or from the same watershed (to maintain local genetic stock) and distributed in appropriate habitat outside the work area (within the same watershed) or in the work area following completion of work. (2) A nursery with experience growing special-status plants can be employed to grow seedlings of the species (from seeds collected locally) that shall be planted in appropriate habitat outside the work area or in the work area following completion of work. It should be noted that seeds derived from plants in the same watershed as the impact area may be available from local nurseries, and local nurseries may also be able to propagate seeds from adults grown from collected seeds. In this case, seeds do not need to be collected from a specific impact area site. Appropriate habitat shall be identified or approved of by MMWD botanical staff.<br>• A monitoring plan shall be developed that details the following components. Conduct annual monitoring of seeded or replanted locations for a minimum of 3 years and up to 5 years, dependent upon the MMWD botanical staff recommendation and monitoring results. If the new population is not matching the average population data, more seeding or planting shall be conducted until pre-removal population levels are met. | | | | | |
| **Impact Biology-1**<br>**MM Biology-3: Prevent the Spread of Invasive Species** | Contractor working with qualified biologist | The District | Where activities covering more than 5 acres could occur in areas of invasive species. | **Before Activity:** Determine the areas where infestations are located and plan work accordingly to prevent spread | |

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| Precautions shall be taken to minimize the introduction of any invasive weeds or to prevent the spread of existing infestations. Prior to conducting an activity that requires the use of mechanical equipment; the area shall be reviewed by a qualified biologist against the most recent maps of invasive species infestation. The biologist shall direct the work crews as to the need for vehicle cleaning and/or the order in which work should be conducted to minimize the possible spread of invasive species. If work is to commence in an area of known invasive species infestation, the work shall be limited to the area of infestation and no equipment shall move to uninfested areas without being washed first. Alternatively, work shall start in the uninfested areas and progress to the more heavily infested areas last.<br>Areas of broadcast burns shall be monitored annually to ensure that invasive species/weeds are not taking over. Invasive species shall be removed until native vegetation establishes. | | | | **During Activity:** Clean vehicles between locations, if needed<br>**After Activity:** Monitor burn areas for invasive species and weeds | |
| **Impact Biology-1**<br>**MM Biology-4: Prevent the Spread of Forest Diseases from Plan Activities**<br>Forest disease spread shall be evaluated by District biologists when management actions are being performed. An evaluation shall be triggered when a District biologist observes that a native vegetation type within the BFFIP area has been impacted by the disease. The biologists shall determine if mechanical methods of vegetation removal could result in the spread of the disease in a given project area, prior to implementing the project. This evaluation shall be conducted by looking at the location of the disease, the types of species that are being impacted, and the methods by which the disease is spreading. If the disease is spread by soil contact, then the biologist shall prescribe methodologies for reducing spread from mechanical methods of vegetation management. These methods would likely be similar to those identified in BMP-4 through BMP-7 including, but not be limited to, washing equipment after working in infected areas, and planning work to progress from uninfected areas to infected areas. | Contractor working with the District's biologists | The District | Where activities covering more than 5 acres could occur in areas of forest disease | **Before Activity:** Determine the areas where infestations are located and plan work accordingly to prevent spread<br>**During Activity:** Implement measures to prevent spread, such as by cleaning vehicles between work locations, if needed<br>**After Activity:** N/A | |
| **Impact Biology-1**<br>**MM Biology-5: Roosting Bats**<br>***Broadcast Burning***<br>Prior to conducting broadcast burning, a qualified biologist shall review the selected location to determine whether potential roosting bat habitat is present. If adequate roosting trees are present, one of two options may be pursued: (1) A qualified bat biologist shall first conduct a focused assessment of the roosting habitat within 2 days of burning to determine whether bats are present. If bats are present. the bat biologist shall determine whether the broadcast burn poses a threat to the roosting bats based on the location of the bats as compared with the prescribed burn location, wind directions, and type of fuel to be burned. If bats could be within direct line of smoke, a threat would occur If a threat could occur, the broadcast burn must be conducted when ambient temperatures are warmer to allow escape of the bats or the tree(s) avoided. (2) The broadcast burn will be conducted, avoiding the potential roosting trees.<br>***Tree Removal***<br>Prior to the removal of trees with a DBH of greater than 10", a qualified biologist shall conduct a focused tree habitat assessment. Trees containing suitable potential bat roost habitat features shall be clearly marked or identified. If day roosts are found to be potentially present, the biologist shall prepare a site-specific roosting bat protection plan to be implemented. Based on site-specific conditions, the plan should incorporate the following guidance as appropriate:<br>**Roost Avoidance**<br>When possible, removal of trees identified as providing suitable roosting habitat should be conducted during seasonal periods of bat activity, including: | Contractor working with qualified biologist | The District | Where trees in bat roosting habitat could be impacted by activities (predominantly MA-21, MA-23, and MA-24) | **Before Activity:** (1) Conduct surveys if tree removal could occur in bat roosting areas and work is occurring during roosting, (2) humanely evict bats, if appropriate<br>**During Activity:** Avoid roosting bats<br>**After Activity:** N/A | |

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| • Between March 1 and April 15, or after evening temperatures rise above 45 degrees Fahrenheit and/or no more than ½ inch of rainfall within 24 hours occurs; or<br>• Between September 1 and about October 15, or before evening temperatures fall below 45 degrees Fahrenheit and/or more than ½ inch of rainfall within 24 hours occurs.<br>If it is determined that a colonial maternity roost is potentially present, the roost shall be avoided and shall not be removed during the breeding season (April 15 to August 31) unless removal is necessary to address an imminent safety hazard. Operation of mechanical equipment producing high noise levels (e.g., chainsaws, heavy equipment) in proximity to buildings/structures supporting or potentially supporting a colonial bat roost shall be restricted to periods of seasonal bat activity (as defined above), when possible.<br>**Assessment**<br>If work with loud, mechanical equipment must occur near a known or potential roosting structure/building during the maternity or hibernation roosting periods, then a qualified bat biologist shall first conduct a focused assessment of the structure. The site-specific plan shall be implemented to prevent noise-related impacts on roosting bats.<br>**Roost Removal**<br>If a tree potentially containing a colonial maternity roost must be removed, such as in the event of unsafe conditions requiring treatment, during the breeding season, then the following or other measures recommended by the qualified bat biologist may be implemented:<br>• Acoustic emergence surveys or other appropriate methods shall be conducted/implemented to further evaluate if the roost is an active maternity roost.<br>• If it is determined that the roost is not an active maternity roost, then the roost may be removed in accordance with the other requirements of this measure;<br>• If it is found that an active maternity roost of a colonial roosting species is present, the roost shall not be disturbed during the breeding season.<br>Potential colonial hibernation roosts will only be removed during seasonal periods of bat activity (i.e., non-hibernation periods). Potential non-colonial roosts that cannot be avoided shall be removed on warm days in late morning to afternoon when any bats present are likely to be warm and able to fly. Appropriate methods shall be used to minimize the potential of harm to bats during tree removal. Such methods may include using a two-step tree removal process. This method is conducted over two consecutive days, and works by creating noise and vibration by cutting non-habitat branches and limbs from habitat trees using chainsaws only (no excavators or other heavy machinery) on Day 1. The noise and vibration disturbance, together with the visible alteration of the tree, is very effective in causing bats that emerge nightly to feed, to not return to the roost that night. The remainder of the tree is removed on Day 2. | | | | | |
| **Impact Biology-1**<br>**MM Biology-6: Protection of Badgers**<br>Prior to prescribed (broadcast and pile) burning, or prior to use of heavy equipment to remove and/or masticate vegetation in badger denning habitat, which is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils, a qualified wildlife biologist shall conduct a survey to identify any American badger burrows/dens. These surveys shall be conducted not more than 15 days prior to the start of work.<br>American badger dens determined to be occupied during the breeding season (February 15 through June 30) shall be flagged, and ground-disturbing activities avoided within 100 feet to protect adults and nursing young. Buffers may be modified by the qualified biologist, provided the badgers are protected, and shall not be removed until the qualified biologist has determined that the den is no longer in use.<br>If the den is occupied during the non-maternity period (July 1 through February 14) and avoidance is not feasible, a passive badger relocation plan will be prepared and submitted to | Contractor working with qualified wildlife biologist | The District | Wherever broadcast burning or use of heavy equipment that could disturb ground (excluding mowers in fuelbreaks or defensible spaces) could be used in badger denning habitat | **Before Activity:** Conduct surveys, as needed<br>**During Activity:** Maintain non-disturbance areas around active dens or evict, as appropriate<br>**After Activity:** N/A | |

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| the CDFW for approval. Any passive relocation of American badgers shall occur only under the direction of a qualified biologist and with CDFW approval. | | | | | |
| **Impact Biology-1**<br>**MM Biology-7: Protection of Nesting Birds**<br>If mowing with heavy equipment or other vegetation (including tree) removal activities or prescribed (broadcast and pile) burning would commence anytime during the nesting/breeding season of native bird species (February 1 to September 1), a pre-construction survey for nesting birds shall be conducted by a qualified biologist within seven days of the habitat disturbance. The survey shall include visually surveying all suitable nesting habitat in the survey area, and be conducted during periods of high bird activity (i.e., 1-3 hours after sunrise and 1-3 hours before sunset). When the activity would occur along an existing fuel break or in other areas that are currently maintained such as along roads and in defensible spaces, then the survey area shall include only the disturbance footprint. During the construction of new fuelbreaks or during vegetation removal with heavy equipment in areas that were not previously managed (such as under MA-23 and MA-24), the survey area shall include the disturbance area and a surrounding buffer to be determined by a qualified biologist depending on type of equipment used, vegetation community, topography, resident bird species, and any other relevant factors.<br>If active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are found in areas that could be directly or indirectly disturbed (noise), a no-disturbance buffer zone shall be created around active nests during the breeding season or until a qualified biologist determines that all young have fledged. The size of the buffer zone shall be determined by the biologist, by taking into account factors including but not limited to the following:<br>1. Noise and human disturbance levels at the site at the time of the survey and the noise and disturbance expected during the vegetation management activity;<br>2. Distance and amount of vegetation or other screening between the site and the nest; and<br>3. Sensitivity of individual nesting species and behaviors of the nesting birds. | Contractor working with qualified biologist | The District | Wherever heavy or noise equipment is used to implement BFFIP management actions | **Before Activity:** (1) Conduct surveys, if appropriate, (2) identify nest buffers as needed<br>**During Activity:** Maintain non-disturbance areas around active nests.<br>**After Activity:** N/A | |
| **Impact Biology-1**<br>**MM Biology-8: Northern Spotted Owl Avoidance During Nesting Season**<br>If mowing with heavy equipment, the mechanical removal of vegetation, or prescribed burning, including pile and broadcast burning, is to occur within the northern spotted owl nesting season (February 1 to July 31), the District shall commission two surveys for nesting northern spotted owls during the months of April and May preceding the commencement of these activities. At a minimum, the survey area shall include all suitable nesting habitats within 0.25 mile of any planned activity sites, and then one of the two options listed below shall be implemented:<br>1. Following a round of protocol-level northern spotted owl surveys in accordance with the USFWS *Protocol for Surveying Proposed Management Activities that may Impact Northern Spotted Owls* (USFWS, 2012), if it is conclusively determined that there are nesting northern spotted owls, planned activities that generate noise (e.g., mowing, heavy equipment usage) that are within 0.25-mile of an identified active nest shall not begin prior to September 1 unless the young have fledged, at which time work may begin no earlier than July 10. Prescribed burns may only occur within suitable northern spotted owl habitat (as determined by a qualified biologist) during the nesting season if protocol surveys have determined that northern spotted owl nesting is not occurring.<br>2. Alternatively, the District shall perform a calculation to determine the minimum buffer needed to avoid impacts on this species from noise generation by equipment. The calculation shall be based on the guidance and methodology in the USFWS | Contractor working with qualified biologist | The District | Any areas of the District's lands where northern spotted owls can occur, including the Watershed and the Nicasio administrative unit | **Before Activity:** (1) Conduct surveys, (2) as appropriate calculate buffer distances or conduct work outside of nesting season<br>**During Activity:** Maintain buffers<br>**After Activity:** N/A | |

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| "Transmittal of Guidance: Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California," (USFWS, 2006) which takes into consideration the baseline noise levels, the noise and duration of noise generated by the loudest equipment, and the topography of the landscape. The resulting buffer calculated using these methods shall be a minimum buffer, but in no case shall the buffer be less than 500 feet. If the calculation is not performed, a conservative 0.25-mile buffer shall be implemented per (1), above. If nesting northern spotted owls are found, activities shall not occur prior to September 1 unless the young have fledged, at which time work may begin no earlier than July 10.<br>Manual methods shall not occur within 131 feet of the line-of-site of a nesting northern spotted owl. | | | | | |
| **Impact Biology-1**<br>**MM Biology-9: Protection of Western Pond Turtle Nesting Habitat and Overwintering**<br>**Nesting**<br>Any mechanical method of vegetation management (i.e., heavy equipment), vehicle travel, or prescribed (broadcast and pile) burning that could occur where suitable western pond turtle nesting habitat is present shall be reviewed by a qualified biologist to determine if western pond turtle nesting could be present in the area. If the work with heavy equipment were to occur in loose soils in oak woodlands, mixed coniferous forests, broadleaf forests, or grasslands that are within 100 feet of ponds, during the western pond turtle egg-laying season (May to August) as determined by the qualified biologist, the activity shall either be rescheduled to occur outside of the egg-laying period; or a survey shall be conducted to determine if eggs and nests are present in the work area and any identified eggs or nests and young turtles shall be avoided.<br>**Overwintering of Hatchlings in Nests**<br>Any mechanical method of vegetation management (i.e., heavy equipment) or vehicle travel that could occur where suitable overwintering habitat for hatchlings is present shall be reviewed by a qualified biologist to determine if any hatchlings could be present in the area. If work with heavy equipment were to occur in loose soils in oak woodlands, mixed coniferous forests, broadleaf forests, or grasslands that is within 225 meters of ponds known to be used by the western pond turtle, during the overwintering season (October to April) (Holland, 1994) as determined by the qualified biologist, the activity shall either be rescheduled to occur outside of the overwintering period, or a survey shall be conducted to determine if hatchlings are present in the work area and any identified nests shall be avoided. | Contractor working with qualified biologist | The District | Wherever heavy equipment, vehicle travel, or prescribed burning could occur in western pond turtle breeding habitat during their breeding season (May to August) or where heavy equipment and vehicle travel could occur during the overwintering season for hatchlings (October to April) | **Before Activity:** (1) Biologist determines if the work area could support pond turtle breeding or overwintering based on the location of the work and proximity to ponds, (2) if no pond turtle could occur, work can proceed, (3) if pond turtle could be found in an area, the area shall be avoided or work rescheduled, (4) a survey can also be performed to rule out pond turtle eggs or overwintering hatchlings from the work area<br>**During Activity:** Avoid pond turtle nests or overwintering hatchlings, if any had been found in surveys<br>**After Activity:** N/A | |
| **Impact Biology-1**<br>**MM Biology-10: California Red-Legged Frog Avoidance**<br>Prior to implementing any vegetation management activities involving vehicles or equipment (i.e., mowers, graders, skid steer loader) within 0.25 mile of Lagunitas Creek downstream of Kent Lake, or around Soulajule Reservoir (or any location where California red-legged frogs have been found), a qualified biologist shall conduct protocol-level in accordance with the USFWS *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog* (USFWS, 2015) surveys the areas where activities are to occur to ensure that no California red-legged frogs are present in the activity footprint. The biologist shall also mark the work area and the maintenance crew shall be directed to stay within the marked activity areas. If California red-legged frogs are found, no work shall occur until the frogs have moved on their own from the activity area. | Contractor working with qualified biologist | The District | Locations where California red-legged frog have been observed or within designated critical habitat | **Before Activity:** (1) Conduct a survey for any individuals in the work area, (2) if California red-legged frogs have been observed or if work is to occur within designated critical habitat, prior use of vehicles or equipment<br>**During Activity:** If observed, activities must not occur until the individual(s) leave the area<br>**After Activity:** N/A | |
| **Impact Biology-1**<br>**MM Biology-11: Marin Elfin Butterfly Host Plant Avoidance**<br>Prior to vegetation management activities in the limited areas where stonecrop is known to occur (steep slopes on southeast shore of Lake Lagunitas, north-facing slopes south of Alpine | Contractor working with the District's botanical staff | The District | Locations where stonecrop is known to occur (steep slopes on southeast share of Lake Lagunitas, north-facing slopes | **Before Activity:** (1) Determine if activity could occur in the limited areas where stonecrop may also | |

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| Lake, and north of Kent Lake), District botanical staff shall be notified. If the activity would occur in an area containing or potentially containing stonecrop, then a survey shall be conducted to flag all stonecrop plants within and bordering the work area. Work crews shall be instructed to avoid flagged plants or larger areas, and work crews shall be trained in identification of stonecrop. | | | south of Alpine Lake, and north of Kent Lake) | occur, (2) conduct survey for stonecrop if there is overlap.<br>**During Activity:** Avoid stonecrop<br>**After Activity:** N/A | |
| **Impact Biology-1**<br>**MM Biology-12: Protection of Foot-Hill Yellow Legged Frog**<br>Immediately prior to the use of heavy equipment, any other ground disturbing Plan activities, or prescribed (broadcast and pile) burning within 50 feet of Big Carson Creek, Little Carson Creek, or their tributaries, a clearance survey for foothill yellow-legged frog shall be conducted by an individual trained in the identification of the species. If foothill yellow-legged frogs are found, no work shall occur until the frogs have moved on their own from the activity center. | Contractor working with trained individual and qualified biologist | The District | Activities (not including manual methods or planting) within 50 feet of Big Carson Creek, Little Carson Creek, or their tributaries | **Before Activity:** (1) Survey for the species<br>**During Activity:** If observed, activities must not occur until the individual(s) leave the area<br>**After Activity:** N/A | |
| **Impact Biology-1**<br>**MM Biology-13: Mollusk Avoidance**<br>Only hand methods of removal shall be used when working directly in seeps or springs, unless a survey for Marin Hesperian and robust walker is undertaken. If the species are not found in surveys, the work can proceed. If individuals are found, the area should be avoided or work shall only proceed using hand methods, supervised by a qualified biologist.<br>If the use of equipment other than hand tools are required in Potrero Meadow, then a site-specific protection plan for Marin Hesperian and robust walker shall be prepared by a qualified biologist. The plan may include conducting clearance surveys and having a qualified monitor onsite during construction activities, as well as ensuring that activities in that area would protect and/or enhance habitat in that area in the long-term. | Contractor working with qualified biologist | The District | The locations where treatments could need to occur in habitat suitable for Marin Hesperian and Robust Walker (i.e., springs or seeps) | **Before Activity:** Survey for the species if work could occur in their habitat<br>**During Activity:** Avoid the species or only perform hand work in the immediate vicinity of the species<br>**After Activity:** N/A | |
| **Impact Biology-1**<br>**MM Biology-14: Northern Spotted Owl**<br>**Projects Within 0.25 Mile of an Activity Center**<br>*Determine Type of Habitat Present*<br>Prior to vegetation management within an area the latest GIS data available for northern spotted owl activity centers shall be consulted to determine whether the project is within 0.25 mile of an activity center. Once determined to be within 0.25 mile of an activity center, the habitat shall be reviewed to determine whether the project is proposed to occur within a forest habitat type that provides potential northern spotted owl foraging, roosting, and/or nesting habitat. This may be accomplished as follows:<br>1. A review of GIS data shall be conducted to determine if the activity is proposed to occur in a forest type potentially used by northern spotted owls (i.e., Douglas-fir, redwood, mixed conifer/hardwood forest, mature broadleaf/evergreen forest types). If the activity would not occur within a forest type potentially used by northern spotted owls, then no further actions is required to protect northern spotted owl habitat.<br>2. If the project is proposed to occur in a forest type potentially used by northern spotted owls, then a site-specific habitat evaluation shall be conducted within the month of February prior to the activity by a qualified northern spotted owl biologist to determine if the area provides the required habitat characteristics to provide northern spotted owl foraging, roosting, and/or nesting habitat.<br>*Projects Within Appropriate Habitat*<br>For projects which are proposed to occur in potential northern spotted owl foraging, roosting, or nesting habitat, the following action shall be implemented prior to management activities: | Contractor working with qualified northern spotted owl biologist | The District | Areas within 0.25-mile of where northern spotted owls could forage, roost, or next | **Before Activity:** (1) Consult GIS layers to determine if a project would occur in northern spotted owl activity areas, (2) conduct surveys to evaluate habitat if work is to occur in a forest that could support northern spotted owls<br>**During Activity:** Alter habitat as specified in measure, avoid woodrat stick nests<br>**After Activity:** N/A | |

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| 1. Habitat alteration within core use areas (nesting and roosting habitat) shall be planned and conducted under the guidance of a qualified northern spotted owl biologist. Opportunities to conduct vegetation management to enhance development of late- successional characteristics or to meet other restoration goals in a manner compatible with retaining resident northern spotted owls shall be evaluated and implemented. Restoration activities conducted near northern spotted owl sites shall first focus on areas of younger forest less likely to be used by northern spotted owls and less likely to develop late-successional forest characteristics without vegetation management. Vegetation management projects shall be designed to include a mix of disturbed and undisturbed areas, retention of woody debris, and development of understory structural diversity to maintain small mammal populations across the landscape.<br>2. Presumed active woodrat stick nests (i.e., with visible signs of activity as determined by the qualified biologist) would be temporarily demarcated during surveys by the qualified biologist. Woodrat stick nests and areas around the nests, shall be avoided during vegetation management activities. Any flagging or other markings would be removed following the activity. | | | | | |
| **Impact Biology-1**<br>**MM Biology-17: Protection of California Giant Salamander**<br>Immediately prior to the use of heavy equipment, any other ground disturbing Plan activities, or prescribed (pile and broadcast) burning within 50 feet of a stream or within riparian habitat, a clearance survey for California giant salamander shall be conducted by an individual trained in the identification of the species. Any identified California giant salamander shall be relocated (by a qualified biologist in possession of a valid Scientific Collecting Permit, or appropriate permit at the time of work if listing status changes) to a suitable nearby location at least 250 feet from the original loction. Alternatively, the activity may be delayed until the salamander has left the area on its own. | Contractor working with trained individual and qualified biologist | The District | Activities (not including manual methods or planting) within 50 feet of a stream or within riparian habitat | **Before Activity:** (1) Survey for the species, (2) move any individuals found in the work footprint prior to conducting activities<br>**During Activity:** N/A<br>**After Activity:** N/A | |
| **Impact Biology-1:** Implement Mitigation Measures MM Geology-1, MM Geology-3, and MM Hydrology-1 (see below) | | | | | |
| **Impact Biology-2:** Implement Mitigation Measures MM Biology-1, MM Biology-2, MM Biology-3, and MM Biology-4 (see above), MM Geology-1 and MM Geology-3 (see below), and Best Management Practices BMP-1 through BMP-7 (see above). | | | | | |
| **Impact Biology-2**<br>**MM Biology-15: Protection of Wetlands**<br>All projects involving mowing with heavy equipment or mechanical removal with heavy equipment shall be evaluated by a qualified biologist prior to initiation of the work. If the biologist determines that the project would occur in an area where wetlands are known or potentially present, the following avoidance and minimization measures shall be implemented:<br>• Prior to mowing or mechanical removal, all wetlands in the disturbance area shall be flagged (or otherwise demarcated) and heavy equipment shall not operate within the flagged area(s); or<br>• Heavy equipment may be operated in a seasonal wetland only when the wetland is dry (as determined by the biologist); or<br>• Only heavy equipment designed to operate within wet or saturated soils may be used. The equipment must be able to operate without causing rutting, compaction of soils, or other soil and topography disturbances. If rutting or soil compaction occurs, these areas shall be restored prior to the wet season. | Contractor working with qualified biologist | The District | Areas where wetlands could occur | **Before Activity:** (1) Biologist reviews work areas to determine if work could occur in a wetland, (2) if yes, areas of wetlands shall be flagged for avoidance prior to conducting work<br>**During Activity:** Use only equipment designated for use in wet, saturated soils<br>**After Activity:** Restore any rutting before the wet season | |
| **Impact Biology-2**<br>**MM Biology-16: Protection of Native Grasslands**<br>All projects involving mowing with heavy equipment, mechanical removal with heavy equipment, or grazing shall be evaluated by the District's biologist prior to initiation of the work. | Contractor working with the District's biologist | The District | Areas where mowing, heavy equipment, or grazing could be used in sensitive grasslands | **Before Activity:** Biologist reviews work areas to determine if work could occur in a sensitive grassland, (2) if yes, areas sensitive | |

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| For the purposes of this measure, a native grassland community is defined as an area with a relative cover or absolute cover of native grasses that meets the "Membership Rules" defined in a Manual of California Vegetation (Sawyer, Keeler-Wolf, & Evens, 2009), and that has a minimum stand size of 0.25-acre. If the biologist determines that the project would occur in an area where native grassland communities are known or potentially present, the following avoidance and minimization measures shall be implemented:<br>• Prior to mowing or mechanical removal, all native grassland communities in the disturbance area shall be identified. The District biologist shall then evaluate if the proposed activity may be detrimental to the grassland area. At a minimum, MM Biology-3 shall be implemented to prevent the spread of invasive species. As needed, the District biologist may also require the following:<br>– Flagging the boundaries of the sensitive grassland area and heavy equipment shall not operate within the flagged area(s); or<br>– Heavy equipment may be operated in the area only after the grasses have gone to seed and when soils are dry; or<br>– Monitoring of the grassland area following the disturbance to ensure that the cover of native grasses has not been altered by the activity, and the implementation of restoration activities as needed. | | | | communities shall be flagged for avoidance prior to conducting work<br>**During Activity:** Avoid flagged areas and only enter the sensitive grasslands after grasses have gone to seed when soils are dry<br>**After Activity:** Monitor the grassland areas following the disturbance for any changes in its size or composition | |
| **Impact Biology-3:** Implement Mitigation Measure MM Biology-1 (see above), MM Geology-3 and MM Hydrology-1(see below) | | | | | |
| **Impact Biology-4:** Implement Mitigation Measures MM Biology-3, MM Biology-5, MM Biology-6, MM Biology-7, MM Biology-8, and MM Biology-9 (see above), MM Geology-1, MM Geology-3, and MM Hydrology-1 (see below) | | | | | |
| **Impact Biology-Cumulative:** Implement Mitigation Measures MM Biology-1, MM Biology-2, MM Biology-3, MM Biology-4, MM Biology-5, MM Biology-6, MM Biology-7, MM Biology-8, MM Biology-9, and MM Biology-10 (see above), MM Geology-1, MM Geology-3, and MM Hydrology-1 (see below) | | | | | |
| **Cultural and Tribal Cultural Resources** | | | | | |
| **Impact Cultural Resources-1**<br>**MM Cultural-1: Cultural Resources Training**<br>All employees and contractors shall receive cultural resource training conducted by a qualified cultural resources specialist (e.g., an archaeologist or tribal monitor, if appropriate) prior to working on BFFIP projects. For tracking purposes, a list of individuals who have received training shall be maintained at the District headquarters. The training shall address appropriate work practices necessary to effectively implement the mitigation measures (MM Cultural-2, -3, and -4), for historical resources, archaeological resources, tribal cultural resources, and human remains. The training shall address the potential for exposing subsurface resources, recognizing basic signs of a potential resource, understanding required procedures if a potential resource is identified including reporting the resource to a qualified archaeologist or cultural resources specialist, and understanding all procedures required under Health and Safety Code § 7050.5 and PRC §§ 5097.94, 5097.98, and 5097.99 for the discovery of human remains. | Contractor working with qualified cultural resources specialist | The District | BFFIP Area | **Before Activity:** Train employees and contractors how to implement the mitigation measures (MM Cultural-2 through MM Cultural-4)<br>**During Activity:** N/A<br>**After Activity:** N/A | |
| **Impact Cultural Resources-1**<br>**MM Cultural-2: Known Cultural Resources and Pre-Activity Surveys**<br>The District shall maintain a confidential GIS database of all survey areas and discovered historic and archaeological resources in the BFFIP area. In the event that a Native American tribe identifies a prehistoric trail alignment on District land, the alignment shall be added to the confidential GIS database.<br>Prior to conducting any work associated with the BFFIP, the work areas shall be compared against the GIS data to determine if the area has been previously surveyed and if it has been surveyed, if any historic or archaeological resources are found in the work area. Any resources that have not been evaluated shall be assumed eligible for listing in the CRHR and assumed significant. | Contractor working with qualified archaeologist; the District | The District | BFFIP Area | **Before Activity:** Consult the GIS cultural resources layer for the presence of recorded sites<br>**During Activity:** (1) Avoid recorded resources or impacts on resources or use only hand methods in resource areas, (2) Examine area where piles are proposed for resources<br>**After Activity:** Remove resource delineators | |

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| If the GIS data shows that the areas where soil -disturbance below the surface through use of heavy equipment, or burning is proposed have not been previously surveyed, consultation with the Tribe shall occur. Notification with maps of the location of work shall be provided to a Native American tribe identified by the NAHC to be traditionally and culturally affiliated with the geographic area of the project site. A pre-activity cultural resources survey shall be conducted by a qualified archaeologist or cultural resources specialist in accordance with industry standards prior to performing work, unless vegetation is too dense making a survey impossible. In the event vegetation is too dense, making a pre-activity survey challenging or impossible, the training conducted under MM Cultural-1, shall be sufficient to permit work to be conducted using only manual techniques accessed on foot.<br>If historical or archaeological resources are located in the work area (either as identified in previous surveys or during pre-activity surveys), the resource, plus a 50-foot buffer, shall be avoided. For resources that are not readily evident in the field, the boundaries around the resource shall be temporarily marked such as with fencing or flagging. If work must commence in the sensitive area, it can only be performed using hand tools or powered hand tools, cannot include ground disturbance below the topsoil layer, and can only be accessed on foot. Alternatively, the resource can be evaluated for eligibility for the CRHR and reviewed by a tribal monitor to determine whether it constitutes a tribal cultural resource, if the resource is archaeological. If found ineligible and not a tribal cultural resource, work could proceed as normal. If found eligible or to be a tribal cultural resource, impacts on the resource must be avoided (through total avoidance of the area, or through use of hand methods only in the area of the resource, as described here). After work is completed, all cultural resource delineators (flags, fencing) shall be removed in order to avoid potential vandalism, unauthorized excavation(s), etc.<br>Prior to stashing slash for pile burning, the areas where piles are proposed for location shall be examined by the workers creating the piles to ensure that no resources are located on the ground surface under the piles. All workers shall be trained in the identification of cultural resources. If a potential resource is identified, piles for burning shall be moved to avoid the resource(s) and MM Cultural-3 implemented. | | | | | |
| **Impact Cultural Resources-1**<br>**MM Cultural-3: Previously Unidentified Cultural Resources**<br>In the event that a previously unidentified cultural resource is discovered during implementation of an activity all work within 165 feet (50 meters) of the discovery shall be halted. The resource shall be located, identified, and recorded in the District's cultural resources GIS identified in MM Cultural-2. Data regarding archaeological resources shall be shared with Native American tribes identified by the NAHC to be traditionally and culturally affiliated with the geographic area of the project site.<br>A qualified cultural resource specialist/archaeologist shall inspect the discovery and determine whether further investigation is required. If the discovery can be avoided and no further impacts shall occur, the resource shall be documented on California State Department of Parks and Recreation cultural resource record forms and no further effort shall be required. If work must commence in the sensitive area, it can only be performed using hand tools or powered hand tools, cannot include ground disturbance below the topsoil layer, and can only be accessed on foot. Alternatively, the cultural resource specialist/ archaeologist shall evaluate the resource and determine whether it is:<br>• Eligible for the CRHR (and a historical resource for purposes of CEQA),<br>• A unique archaeological resource as defined by CEQA, and/or<br>• A potential tribal cultural resource (all archaeological resources could be a tribal cultural resource).<br>If the cultural resources specialist/archaeologist determines that the resource could be a tribal cultural resource, he or she shall, within 48 hours of the discovery, notify each Native American tribe identified by the NAHC to be traditionally and culturally affiliated with the geographic | Contractor working with qualified archaeologist | The District | BFFIP Area | **Before Activity:** N/A<br>**During Activity:** (1) Cease activity if a cultural resource is uncovered, (2) Avoid resource if possible, (3) Evaluate and determine whether the resource is eligible, unique, or could be a tribal cultural resource, (4) If the resource could be a tribal cultural resource, notify Native American tribe identified by the NAHC to be traditionally and culturally affiliated with the geographic area of the project site, (5) If the resource is not eligible, unique, and/or a tribal cultural resource, work may commence, (6) If the resource is eligible, unique, and/or a tribal cultural resource, work remains halted and a method selected to ensure that adverse change to the resource does not occur, (7) Preserve in place if possible, (8) If not possible to preserve in place, | |

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| area of the project site of the discovery. A tribal monitor shall inspect the resource to determine whether it constitutes a tribal cultural resource. If the resource is determined to be neither a unique archaeological, an historical resource, or a potential tribal cultural resource, work may commence in the area.<br>If the resource meets the criteria for either a historical resource, unique archaeological resource, and/or tribal cultural resource, work shall remain halted and the cultural resources specialist/archaeologist shall consult with the District staff regarding methods to ensure that no substantial adverse change would occur to the significance of the resource pursuant to CEQA Guidelines Section 15064.5(b). The responding tribes shall be given an opportunity to participate in determining the appropriate mitigation methods for tribal cultural resources in consultation with the District.<br>Avoidance of the area, or avoidance of impacts on the resource, is the preferred method of mitigation for impacts on cultural resources and shall be required unless there are other equally effective methods. Other methods to be considered shall include evaluation, collection, recordation, and analysis of any significant cultural materials in accordance with a Cultural Resources Management Plan prepared by the qualified cultural resource specialist/archaeologist. The methods and results of evaluation or data recovery work at an archaeological find shall be documented in a professional level technical report to be filed with California Historical Resources Information System (CHRIS).<br>Work may commence upon completion of evaluation, collection, recordation, and analysis, as approved by the qualified archeologist and tribal monitor, for tribal cultural resources. | | | | and as deemed appropriate by the qualified cultural resource specialist/archaeologist and tribal monitor, for tribal cultural resources, recover and record cultural materials. Once recovered and recorded, the activity can commence in this area.<br>**After Activity:** Ensure resource has been appropriately recorded in District's cultural resources GIS. | |
| **Impact Cultural Resources-2**<br>**MM Cultural-4: Human Remains**<br>The treatment of human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity within the proposed plan area shall comply with applicable State laws.<br>• If human remains are at any time noted during activities around MRN-496/P-21-000445 or in the plan area, work shall be halted within 165 feet (50 meters) of the discovery. The professional archaeologist and the District shall notify the Marin County Coroner's office as prescribed in Public Resources Code §5097.98 and Health and Safety Code §7050.5.<br>• In the event of the coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission is required, who shall appoint a Most Likely Descendant (MLD) (PRC §5097.98).<br>• The human remains shall be protected until a decision is reached on the final disposition of the remains.<br>• The District, the professional archaeologist, and the MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5[d]). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. If the MLD and the other parties do not agree on the disposition of the remains, the reburial method shall follow PRC §5097.98(b) which states that:<br>. . . the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance. | Contractor, coroner, the District, the professional archaeologist, the MLD | Marin Municipal Water District | BFFIP Area | **Before Activity:** N/A<br>**During Activity:** (1) Avoid known location of human remains, (2) Cease activity if human remains are uncovered, (3) Appoint a Most Likely Descendent, (4) Protect human remains until a decision is reached, (5) If avoidance is not possible, the District, professional archaeologist, and MLD, remove human remains and associated or unassociated funerary objects from the location and move to selected location in accordance to decision reached. Once moved then the activity can commence again in this area.<br>**After Activity:** N/A | |
| **Impact Cultural Resources-3:** Implement Mitigation Measures MM Cultural-1, MM Cultural-2, MM Cultural-3, and MM Cultural-4 (see above) | | | | | |
| **Impact Cultural Resources-Cumulative:** Implement Mitigation Measures MM Cultural-1, MM Cultural-2, MM Cultural-3, and MM Cultural-4 (see above) | | | | | |

| Best Management Practice and Mitigation Measure | Implementation Responsibility | Monitoring Responsibility | Applicable Locations | Timing and Performance Standards | Compliance Verification |
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| **Geology and Soils** | | | | | |
| **Impact Geology and Soils-1**<br>**MM Geology-1: Erosion Control and Slope Stability Measures**<br>Best management practices (BMPs) for forestry shall be implemented to ensure vegetation management does not result in erosion, loss of topsoil, or slope instability in areas where work could result in the exposure of bare soils or the loss of root-soil matrix strength. If groundcover is determined to be less than 70 percent[a] following work, then BMPs, as identified here, shall be implemented.<br>Prior to conducting work in any given area under any management action that could result in erosion or slope instability (e.g., broadcast burns, tree removal, weed removal, or forest treatments that could reduce the groundcover and expose soil) the area shall be inspected for existing signs of erosion or slope instability (e.g. rills, slumped soil). Depending on the slope and the downslope resources (roads that could be impacted if a slope failed, waterbodies or habitat that could be impacted from erosion, important habitat, etc.), erosion and slope stabilization measures shall be determined prior to implementation of work, based on the list below. Generally, if an action would expose soils (groundcover less than 70 percent), then measures to protect soils, minimize erosion, and prevent slope instability shall be implemented. The measures to be implemented shall depend on the site's specific characteristics and the type and extent of vegetation management work to be performed. The inspection and determination of appropriate measures shall be made by personnel with knowledge and experience in the application of erosion and slope stabilization BMPs through training or field experience with BMP installation. The personnel shall memorialize in writing their field observations, and corresponding recommendations regarding installation of BMPs.<br>The following measures shall be implemented during work, if the activity would reduce groundcover by 70 percent or more and as applicable:<br>• Minimize areas to be disturbed to the greatest extent feasible<br>• Avoid use of heavy equipment on slopes greater than 30 percent<br>• Shut down use of heavy equipment, skidding, and truck traffic when soils become saturated and unable to support the machines<br>• Sow native grasses and other herbs on denuded areas where natural colonization or other replanting shall not occur rapidly; use slash or chips to prevent erosion on such areas<br>• Use surface mounds, depressions, logs, rocks, trees and stumps, slash and brush, the litter layer, and native herbaceous vegetation downslope of denuded areas to reduce sedimentation and erosion, as necessary to prevent erosion or slope destabilization<br>• Stabilize steep slopes (i.e., greater than 30 percent) with mats or natural materials after tree removal or weed removal and prior to planting, where soils are exposed and could erode<br>• Broadcast burns shall be performed outside of perennial and intermittent streams, and riparian forest/woodland. A 50-foot buffer around perennial and intermittent streams shall be maintained when the broadcast burn is proposed on a slope greater than 30 percent and upslope of the stream.<br>• Install approved erosion control measures and non-filament-based geotextiles when:<br>– conducting substantial ground disturbing work (i.e., use of heavy equipment, pulling large vegetation) within 100 feet[b] and upslope of currently flowing or wet wetlands, streams, lakes and riparian areas;<br>– causing soil disturbance on moderate to steep (10 percent slope and greater) slopes; and<br>– following the removal of invasive plants from stream banks to prevent sediment movement into watercourses and to protect bank stability | Contractor | The District | Any areas where the ground is disturbed and soils are exposed through vegetation management actions | **Before Activity:** Inspect areas for treatment prior to treatment to assess the potential for erosion and soil instability<br>**During Activity:** Implement the protection measures as needed to avoid or minimize erosion and slope instability<br>**After Activity:** Conduct inspections as needed after actions, depending on the size and nature of the work and the site, to ensure that erosion is not occurring and to remove any erosion control devices once they are no longer needed | |

| Best Management Practice and Mitigation Measure | Implementation Responsibility | Monitoring Responsibility | Applicable Locations | Timing and Performance Standards | Compliance Verification |
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| • Sediment control devices, if installed, shall be certified weed-free, as appropriate. Sediment control devices shall be inspected daily to ensure that they are in good repair and working as needed to prevent sediment transport into the waterbodies (and repaired as needed)<br>• Prior to conducting ground disturbing work the weather forecast shall be consulted; No substantial ground disturbing work (i.e., use of heavy equipment, pulling large vegetation) shall occur during rain events and 48 hours after a rain event, defined as 0.5 inch of rain or greater within a 48-hour period, or until soils are determined to not saturated<br>Once work is completed the areas shall be inspected as needed and as accessible but at least annually until groundcover exceeds 70 percent and it is clear that significant erosion and slope instability are not occurring. At that time, erosion control and slope stability devices shall be removed. | | | | | |
| **Impact Geology and Soils-1**<br>**MM Geology-2: Fire Lines During Broadcast Burns**<br>One or more of the following measures shall be implemented during broadcast burns to reduce erosion from fire lines:<br>• Use existing barriers such as roads, trails, or wet lines as fire lines<br>• Restore fire lines upon completion of the burn if they would not be used again (unless they are existing roads, trails, or other permanent elements). Utilize erosion control measures, such as sediment traps, during restoration to reduce sedimentation impacts. Restoration shall occur prior to one month after the fire line was created, assuming the fire line will not be used by another burn in the same year<br>• Design broadcast burn boundaries to avoid gullies and highly erodible soils to the fullest extent possible | Contractor | The District | Broadcast burn areas | **Before Activity:** Determine fire lines<br>**During Activity:** Set up provisions as specified in the measure<br>**After Activity:** Restore fire lines upon completion of work | |
| **Impact Geology and Soils-1**<br>**MM Geology-3: Grazing Land and Trail Control**<br>Methods shall be implemented to reduce the possibility that grazing trails form include the following:<br>• Prohibit grazing within 100 feet of lakes/reservoirs, creeks, streams, riparian corridors, and wetlands. Install fencing 100 feet from streams and riparian areas to exclude livestock<br>• Implement methods, which could include rotating or providing multiple feeding areas, to minimize congregation of animals in any one location<br>• Limit the number of animals spent grazing in a particular sized area, using the stocking rate equation taking into account days assumed to graze, slope, yield of the land, number of animals, weight of animals, and other appropriate factors<br>• Conduct surveys of the grazing area during active grazing, identify if trails or other erosion features are forming<br>• Ensure there are appropriate rest periods between grazing in any one area to allow regrowth of plants<br>• If grazing trails or damaged areas form, the bare area shall be remediated by decompacting the soil and discontinuing grazing in the area until the trails are revegetated<br>• Install off-stream watering tanks<br>• Install fencing to exclude livestock from grazing on steep slopes (generally slopes with more than 30 percent grade), unless accounted for in stocking rate equation<br>• During surveys of active grazing, conduct ongoing surveillance of installed erosion control features around riparian areas and fences around riparian areas<br>• Repair damaged fencing or erosion control features as necessary | Contractor | Marin Municipal Water District | Grazing areas | **Before Activity:** Install fencing as needed<br>**During Activity:** (1) Limit number of animals in an area based on appropriate calculations and minimize congregation of animals in any one location, (2) Repair damaged fencing or erosion control features, and (3) Conduct surveys during grazing to identify problem areas<br>**After Activity:** (1) Permit appropriate rest periods after grazing, and (2) Remediate any bare areas | |

| Best Management Practice and Mitigation Measure | Implementation Responsibility | Monitoring Responsibility | Applicable Locations | Timing and Performance Standards | Compliance Verification |
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| **Impact Geology and Soils-2:** Implement Mitigation Measures MM Geology-1, MM Geology-2, and MM Geology-3 (see above) | | | | | |
| **Impact Geology and Soils-Cumulative:** Implement Mitigation Measures MM Geology-1, MM Geology-2, and MM Geology-3 (see above) | | | | | |
| **Greenhouse Gas Emissions** | | | | | |
| **Impact GHG-1:** Implement Mitigation Measure MM Air-1 | | | | | |
| **Impact GHG-2:** Implement Mitigation Measure MM Air-1 | | | | | |
| **Impact GHG-Cumulative:** Implement Mitigation Measure MM Air-1 | | | | | |
| **Hazardous Materials and Fire Hazards** | | | | | |
| **Impact Hazards-1**<br>**MM Hazards-1: Spill Prevention and Response**<br>The District shall, at a minimum, implement best management practices that address the following procedures related to the use of hazardous materials during construction:<br>• Proper disposal or management of contaminated soils and materials (i.e., clean up materials)<br>• Daily inspection of vehicles and equipment for leaks and spill containment procedures<br>• Emergency response and reporting procedures to address hazardous material releases<br>• Emergency spill supplies and equipment shall be available to respond in a timely manner if an incident should occur<br>• Response materials such as oil-absorbent material, tarps, and storage drums shall be available in the plan area at all times during management activities and shall be used as needed to contain and control any minor releases<br>• The absorbent material shall be removed promptly and disposed of properly<br>• Use of secondary containment and spill rags when fueling<br>• Discourage "topping-off" fuel tanks<br>• All workers shall be trained on the specific procedures for hazardous materials and emergency response as an element of the required worker environmental training prior to working in the plan area | Contractor and the District | The District | BFFIP Area | **Before Activity:** N/A<br>**During Activity:** (1) Implement appropriate best management practices that limit the potential for spills, (2) Cleanup any inadvertent spills appropriately<br>**After Activity:** N/A | |
| **Impact Hazards-2**<br>**MM Hazards-2: Avoidance of MVAFS Hazards**<br>Workers shall avoid all existing and former buildings and facilities within MVAFS or until the site is found to not have contamination in excess of background levels. | Contractor | The District | Projects within MVAFS | **Before Activity:** N/A<br>**During Activity:** Avoid existing and former buildings and facilities when conducting weed removal activities<br>**After Activity:** N/A | |
| **Impact Hazards-4:** Implement Mitigation Measures MM Hazards-1 (see above) and MM Hazards-3 (see below)<br>**MM Hazards-3: Fire Risk Reduction for Stockpiling and Pile Burning**<br>Piles shall not be burned during the fire season. Pile burning shall only be allowed on days when fire is less likely to spread (e.g., wind speeds are less than 15 mph). All requirements of the BAAQMD shall be met, including any permit, notification, and reporting requirements. Public notification shall be provided at least 24 hours in advance of a burn to individuals within 1 mile and at trailheads and fire roads leading to the area with piles proposed for burning. The public notification shall include current contact numbers to the appropriate burn coordinator. | Contractor | The District | Wherever stockpiles of slash are made and piles burned | **Before Activity:** Notify public and obtain all permits and make all necessary notifications as required by BAAQMD and MCFD<br>**During Activity:** (1) Ensure that piles are away from highly ignitable areas (2) Ensure proper weather conditions during pile burning (3) Ensure proper fire-fighting equipment is on-hand during pile burning | |

| Best Management Practice and Mitigation Measure | Implementation Responsibility | Monitoring Responsibility | Applicable Locations | Timing and Performance Standards | Compliance Verification |
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| | | | | **After Activity:** N/A | |
| **Impact Hazards-4**<br>**MM Hazards-4: Prescribed Burn Plan**<br>Prescribed Burn Plans shall be prepared for each broadcast burn project or for a larger area covering several planned projects. The Prescribed Burn Plan shall include the following information, at a minimum:<br>• Project purpose and predicted outcome<br>• Project location<br>• Fuel conditions (discussion of types of plants and trees within and adjacent to project area)<br>• Allowable atmospheric conditions and times to conduct the burn for safety and smoke dispersal (i.e., wind speeds, temperature, humidity, moisture of vegetation). Prescribed Burn Plans shall specify that burns generally occur:<br>– After the morning inversion layer and before the evening inversion layer<br>– When the atmosphere is neutral to unstable<br>– During the day, to avoid nighttime inversion layers<br>– When wind speeds are high enough that the air is not stagnant (i.e., 5 mph) and low enough that the broadcast burn can be managed safely<br>• Avoidance of high fire danger days (e.g., Red Flag Days and Fire Weather Watch) Have fire suppression crews on-site from the start of the fire season determined by CAL FIRE (usually mid-May to early June) to the end of fire season (mid-November) during broadcast and pile burns<br>• The broadcast burn specialist shall determine an appropriate buffer between flammable infrastructure or buildings and the broadcast burn, which is dependent upon the types of vegetation burned, moisture, weather, and topography<br>• Event day logistics (numbers and types of personnel and equipment required, personal protective equipment)<br>• Contingency plans (i.e., location and response time of emergency response, secondary fire lines)<br>• Public notification at least 24 hours in advance of the burn to individuals within 1.5 miles and at trailheads and fire roads leading to the area proposed for burning. The public notification shall include current contact numbers to the appropriate burn coordinator.<br>• Agency notification and coordination as required<br>• Requirements of BAAQMD and MCFD | Contractor | The District | Broadcast burn projects | **Before Activity:** (1) Prepare Prescribed Burn Plan including all identified details, (2) Notify the public at least 24 hours prior to broadcast burn and obtain necessary permits form or provide necessary notifications to MCFD and BAAQMD, (3) Arrange for appropriate crew and equipment to be on-site<br>**During Activity:** Implement Prescribed Burn Plan<br>**After Activity:** N/A | |
| **Impact Hazards-4**<br>**MM Hazards-5: Roads and Trails Around Broadcast Burns**<br>**Trails and District-Use-Only Roads**<br>District-use-only roads and trails shall be closed to public recreational access if determined to be necessary in accordance with the burn-specific Burn Plan and/or Incident Action Plan ~~at least 500 feet of the outermost edges of a broadcast burn~~. District-use-only roads and trails shall be posted and blockaded with temporary fencing or the like, if closures are needed. Notices of closures shall be posted at the trail heads and on the District's website, when needed. Additional measures such as staffing trail head closures can be implemented as needed.<br>**Public Roads**<br>If possible, public roads within 500 feet of the outermost edges of a broadcast burn shall be closed in coordination with the appropriate agency (e.g., Caltrans, Marin County). In the | Contractor | The District | Within 500 feet of the outer edges of a broadcast burn | **Before Activity:** (1) Post notices of closures at trailheads and online, (2) Prepare Traffic Control Plan<br>**During Activity:** (1) Place blockades along District-use-only roads and trails, (2) staff closures of District-use-only roads and trails, if needed, (3) Implement Traffic Control Plan for public roads adjacent to broadcast burns<br>**After Activity:** Remove blockades and signage | |

| Best Management Practice and Mitigation Measure | Implementation Responsibility | Monitoring Responsibility | Applicable Locations | Timing and Performance Standards | Compliance Verification |
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| event this is not feasible, due to volume of traffic or lack of alternative routes, a Traffic Control Plan shall be prepared and adopted, in coordination with the appropriate agency. The Traffic Control Plan shall include the following at a minimum:<br>• Requirement to coordinate with local law enforcement (e.g., County Sheriff, California Highway Patrol)<br>• Installation of temporary signage at intervals ahead of and adjacent to the broadcast burn indicating that a broadcast burn is in progress<br>• Use of flaggers to slow traffic during the burn or stop traffic if wind conditions shift, resulting in smoke crossing the road | | | | | |
| **Impact Hazards-4**<br>**MM Hazards-6: Propane Flaming Training**<br>Workers shall be trained prior to use of a propane torch. The training shall specify that, at a minimum, areas treated with a propane torch shall be monitored until it is clear that no smoke, smoldering vegetation, or flames are present. | Contractor | The District | In areas treated with a propane torch | **Before Activity:** Train workers for safe use of a propane torch<br>**During Activity:** Monitor areas where propane flaming has been used for potential fires prior to leaving<br>**After Activity:** N/A | |
| **Impact Hazards-4:** Implement Mitigation Measures MM Air-4 (see above) and MM Hazards-7 (see below)<br>**MM Hazards-7: Fire Ignition and Spread Reduction**<br>The following provisions shall be implemented during all management actions that involve the use of equipment that can generate sparks or heat:<br>• Maintain fire suppression equipment in work vehicles<br>• Closely monitor for ignited vegetation from equipment and tool use<br>• Observe Red Flag Day and Fire Weather Watch warnings<br>• Train workers to properly handle and store flammable materials, minimize potential ignition sources<br>• Prohibit smoking in any vegetated areas | Contractor | The District | BFFIP Area | **Before Activity:** N/A<br>**During Activity:** Ensure that measures are being implemented<br>**After Activity:** N/A | |
| **Impact Hazards-5:** Implement Mitigation Measures MM Hazards-1, MM Hazards-3, MM Hazards-4, MM Hazards-5, MM Hazards-6, MM Hazards-7, and MM Air-4 (see above) | | | | | |
| **Impact Hazards-6:** Refer to individual analyses of MA-20 and MA-21 for application of mitigation measures pertinent to installation of fuelbreaks. | | | | | |
| **Impact Hazards-7:** Implement Mitigation Measures MM Geology-1 and MM Geology-2 (see above) | | | | | |
| **Impact Hazards-Cumulative:** Implement Mitigation Measures MM Geology-1, MM Geology-2, MM Hazards-3, and MM Air-4 (see above) | | | | | |
| **Hydrology and Water Quality** | | | | | |
| **Impact Hydrolgoy-1**<br>**MM Hydrology-1: Water Quality Protection During Waterway Crossing or Work Near Waterbodies**<br>Vehicles and heavy equipment shall avoid instream crossings. If instream (waterway) crossings must occur because no other options for access are reasonably available, the crossing shall be performed when the stream is dry and soils are not saturated. The crossing shall be performed in a way that does not result in any permanent alteration of the stream bank or bed (e.g., choosing areas with stable soils and the least slope or with vegetation to protect the bed and bank). If water is flowing or the stream has flow or saturation, temporary plates or the equivalent shall be installed from bank to bank so for equipment to access across the waterway. If an instream crossing that could impact the bank or bed or riparian vegetation is needed, the crossing shall only be performed after and in accordance with the appropriate 1600 Streambed Alteration permit from CDFW and Section 404 and 401 Clean Water Act | Contractor | The District | Anywhere vehicles and heavy equipment must cross streams or creeks | **Before Activity:** (1) Obtain permits, (2) install plates or record vegetative conditions, as appropriate<br>**During Activity:** Minimize soil or vegetation disturbance, as appropriate<br>**After Activity:** Restore crossing area | |

<table>
<tr><th>Best Management Practice and Mitigation Measure</th><th>Implementation Responsibility</th><th>Monitoring Responsibility</th><th>Applicable Locations</th><th>Timing and Performance Standards</th><th>Compliance Verification</th></tr>
<tr><td colspan="6">permits. All soils shall be restored after the instream crossing and banks revegetated after the work is completed, in accordance with permits.</td></tr>
<tr><td colspan="6">Impact Hydrolgoy-1: Implement Mitigation Measures MM Geology-1, MM Geology-2, MM Geology-3, and MM Hazards-1 (see above)</td></tr>
<tr><td colspan="6">Impact Hydrolgoy-3: Implement Mitigation Measures MM Hydrology-1, MM Geology-1, MM Geology-2, MM Geology-3, and MM Hazards-1 (see above)</td></tr>
<tr><td colspan="6">Impact Hydrology-Cumulative: Implement Mitigation Measures MM Hydrology-1, MM Geology-1, MM Geology-2, MM Geology-3, and MM Hazards-1 (see above)</td></tr>
<tr><td colspan="6">Noise</td></tr>
<tr><td>Impact Noise-1: Implement Mitigation Measures MM Air-3 and MM Hazards-5 (see above), and MM Noise-1 (see below)<br>MM Noise-1: Noise Reduction Measures<br>Work Timeframe Restrictions Near Sensitive Receptors<br>Work within 180 feet of a sensitive receptor shall only occur Monday through Friday from 7 am to 6 pm and Saturdays from 9 am to 5 pm, with no work allowed on Sundays or holidays, to follow the requirements of the Marin Countywide Plan (NO-1.i).<br>Near Residences and Ranger Residences<br>For activities that occurs in any one location (1,000 square foot area) for longer than 5 days within a 30-day period, the following noise buffers for equipment shall be implemented:
<table>
<tr><th>Equipment</th><th>Buffer Between Equipment and Sensitive Receptors (feet)</th></tr>
<tr><td>Backhoe/ Brushcutter</td><td>80</td></tr>
<tr><td>Chainsaw/ Excavator</td><td>113</td></tr>
<tr><td>Chipper</td><td>180</td></tr>
<tr><td>Generator/ Water pump</td><td>127</td></tr>
<tr><td>Fire engine</td><td>71</td></tr>
<tr><td>Leaf blower</td><td>64</td></tr>
<tr><td>Skid steer</td><td>90</td></tr>
</table>
• If these restrictions are not implementable between residences and a given location, the District shall notify the resident or contact at the sensitive receptor within 1 week of conducting the work. Work shall be coordinated to minimize disturbance to the receptor, such as conducting the work when no one is there. Noise barriers or other means could also be used, if necessary, to keep noise levels below 70 dBA. The District shall designate a disturbance coordinator to address any noise complaints under these circumstances.<br>• If these restrictions are not implementable between ranger residences and a given location, the District shall coordinate work with rangers at ranger residences to conduct work lasting more than 5 days within a 30-day period, to a time when rangers are not in the residences or when they would not be disturbed by the noise.<br>Near Cushing Memorial Amphitheater<br>• Coordinate with operators at Cushing Memorial Amphitheater to conduct work outside of event times.<br>Near Schools<br>• Coordinate work with Deer Park School and the San Anselmo Children's Center to occur when classes or other instructional activities are not occurring for any work involving</td><td>Contractor and the District</td><td>The District</td><td>BFFIP Area</td><td>Before Activity: (1) Notify affected parties 1 week before, if applicable; (2) Conduct noise study, if desired<br>During Activity: (1) A designated coordinator shall ensure setbacks or other conditions are implemented: (2) Maintain buffer between receptor and equipment, if needed<br>After Activity: N/A</td><td></td></tr>
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| Best Management Practice and Mitigation Measure | Implementation Responsibility | Monitoring Responsibility | Applicable Locations | Timing and Performance Standards | Compliance Verification |
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| mechanical/powered equipment that would last longer than 1 day and could cause noise to exceed 70 dBA at the school or childcare center.<br>**Noise Study**<br>If the District, based on their extensive history of conducting vegetation management activities, questions whether a noise level of 70 dBA may actually be exceeded by equipment at a sensitive receptor per the analysis in this section, the District may undertake a noise study to measure actual noise levels from equipment used during management actions to recalibrate the distances listed here. The noise study would be conducted by a noise consultant to industry standards. Resultant noise levels at sensitive receptors cannot exceed 70 dBA if the work lasts for more than 10 days near residences, ranger residences, and Cushing Memorial Amphitheater, or for more than 1 day near a school. | | | | | |
| **Impact Noise-Cumulative:** Implement Mitigation Measure MM Noise-1 (see above) | | | | | |
| **Recreation** | | | | | |
| **Impact Recreation-1:** Implement Mitigation Measures MM Hazards-5 (see above) and MM Recreation-1 (see below)<br>**MM Recreation-1: Protection of Recreationalists Along Trails and Roads**<br>The following measures shall be implemented when management actions require heavy equipment or generate other hazardous conditions along roads and trails:<br>• Close roads or trails when they are being used regularly by heavy trucks, transporting heavy equipment, or other large equipment that poses a hazard to recreationalists<br>• Provide a road guard to usher recreationalists around hazards where work could impede on a road or trail, such as for stockpiling removed trees or vegetation.<br>• Provide fencing to protect recreationalists from active work, as necessary.<br>• Provide signage at trailheads at least one week prior to closure indicating that work may be occurring along the trails and for recreationalists to use caution. | Contractor | The District | Anywhere that implementation of management actions could pose a hazard to recreationalists | **Before Activity:** Post notices at least one week prior to trail closure<br>**During Activity:** Use road guards, fences, or implement closures as appropriate as work is being conducted<br>**After Activity:** Remove signage, as appropriate | |
| **Impact Recreation-Cumulative:** Implement Mitigation Measure MM Recreation-1 (see above) | | | | | |
| **Transportation** | | | | | |
| **Impact Transportation-2:** Implement Mitigation Measures MM Recreation-1 and MM Hazards-5 (see above) | | | | | |
| **Impact Transportation-3**<br>**MM Transportation-1: Emergency Access**<br>The District shall ensure emergency access to the plan area along public roads is maintained during work. The following measures shall be implemented to ensure access is maintained:<br>1. In the event of an emergency, roads blocked or obstructed for maintenance activities shall be cleared to allow the vehicles to pass.<br>2. The District shall use road guards equipped with two-way radios during temporary lane or road closures. During an emergency, road guards will radio to the crew to cease operations and reopen the road to emergency vehicles.<br>3. All District authorized vehicles at the treatment site shall be parked so they do not block roads when there is no operator present to move the vehicle.<br>The District shall contact the fire district or other emergency response agency with jurisdiction over the road subject to temporary closure to ensure that the agency is notified of the closure in advance. | Contractor and the District | The District | All locations on district lands where roads or trails may be blocked to perform work | **Before Activity:** N/A<br>**During Activity:** Inform emergency responders of road closures and ensure road guards, and crew are equipped with two-way radios<br>**After Activity:** N/A | |
| **Impact Transportation-Cumulative:** Implement Mitigation Measure MM Transportation-1 (see above) | | | | | |

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**Item Number:** 05
**Meeting Date:** 06-15-2023
**Meeting:** Watershed Committee/Board of Directors (Watershed)

# Informational Item

**TO:** Watershed Committee/Board of Directors (Watershed)

**FROM:** Jonathan Koehler, Natural Resources Manager Fisheries
Shaun Horne, Watershed Resources Manager

**THROUGH:** Ben Horenstein, General Manager

**DIVISION NAME:** Watershed

**ITEM:** Lagunitas Creek Fisheries Monitoring and Tagging Update


**SUMMARY**
The District has been a leader in habitat restoration and salmon and steelhead monitoring in the Lagunitas Creek watershed since the late 1990's. One important component of this monitoring is the use of Passive Integrated Transponder tags – commonly referred to as PIT tags - to track fish movement, survival, and growth over time. District biologists implant PIT tags, each with a unique identification code, into hundreds of juvenile Coho Salmon and steelhead every year. These tagged fish are then re-captured during subsequent surveys and/or detected as they swim past antenna stations located in streams throughout the watershed. With the assistance of grant funding, the District is currently looking to expand PIT tagging within the Lagunitas Creek watershed by strategically adding new antenna stations and increasing the number of fish tagged each year. Staff will provide an overview of the District's current PIT tagging program and discuss how it this technology is being used to monitor the effects of ongoing restoration projects in Lagunitas Creek.


**DISCUSSION**
The Lagunitas Creek Stewardship Plan, adopted by the District in 2011, guides the District's fisheries monitoring program for endangered Coho Salmon and threatened steelhead trout. In accordance with the Stewardship Plan, the District conducts annual surveys for adults, juveniles, and smolts (ocean-bound juveniles) to track population trends and contribute to species recovery. The Lagunitas Creek watershed is considered one of the highest priority areas in the state for recovery of these species.

Salmon and steelhead (salmonids) are challenging to study, due in large part to their complex lifecycles and the dynamic and variable environments in which they live. Additionally, a large portion of the salmonid lifecycle occurs in the ocean, away from our sphere of influence. This fundamental challenge to aquatic research has led to the development of many technologies to help track fish movement. One of the most commonly used fish tracking technologies is the Passive Integrated Transponder tag – commonly referred to as PIT tag. These small tags contain the same technology as the "microchips" used in pet dogs and cats, and are widely used in fisheries studies to track fish movement, survival, and growth over time.

Each PIT tag is a small glass cylinder that houses a radio transponder containing a unique code. Most of the time, the tag is inactive (or passive) and does not emit any type of signal. However, when the tag passes through an electromagnetic field produced by a special scanner and antenna, the transponder inside the tag transmits its unique identification code. The code is detected by the antenna and recorded by an electronic data logger. PIT tags do not require batteries, making them relatively inexpensive and able to last the fish's entire lifecycle.

The District has installed and currently operates three PIT tag antenna stations at the following locations: Lagunitas Creek at Gallagher Ranch, Devil's Gulch at the confluence with Lagunitas Creek, and San Geronimo Creek at the San Geronimo Pump Station. These antennas operate continuously (24 hours/day), and the data is regularly maintained and downloaded. Although these antennas provide a wealth of information on salmonid growth, survival, movement patterns, and population size, there is need for additional antennas to improve tag detection probability and provide redundancy in the event of equipment failures during key times of the year.

District fisheries staff have identified several potential locations for additional PIT tag antenna monitoring stations within the Lagunitas Creek watershed. These include two sites within Samuel P. Taylor State Park where extensive stream restoration work is planned, and two sites further downstream. Additionally, the District is collaborating with the National Park Service to explore potential locations in Olema Creek in order to make equipment in both watersheds compatible. With the assistance of grant funding, the District is looking to purchase and install additional PIT tag antennas to achieve full coverage of the watershed and to increase the number of fish that are tagged annually. Staff will provide an overview of the current and planned PIT tagging program and discuss how it relates to ongoing stream restoration efforts.

**FISCAL IMPACT**
None

**ATTACHMENT(S)**

None