SHORT-TERM IMPLEMENTATION PLAN

FOR THE TOWN OF TIBURON OPEN SPACE RESOURCE MANAGEMENT PLAN

TOWN OF TIBURON, CALIFORNIA

LSA

January 2022

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January 2022

TABLE OF CONTENTS

1.0 OVERVIEW 1
1.1 Plan Purpose 1
1.2 Tiburon Open Space Lands 2
1.2.1 Location 2
1.2.2 OSRMP Background 3
2.0 HISTORY OF OPEN SPACE MANAGEMENT AND CURRENT PRACTICES 5
2.1 General Process and Current Practices 5
2.2 Vegetation Management Activities Conducted between 2015 and 2020 6
3.0 OPEN SPACE RESOURCE MANAGEMENT PLAN UPDATES 8
3.1 Vegetation and Sensitive Natural Resources 8
3.1.1 Special-Status Plant Species 9
3.1.2 Invasive Species and Noxious Weeds 10
3.1.3 Sudden Oak Death 18
3.2 Prioritization of Management Activities 24
4.0 PROPOSED NEAR-TERM MANAGEMENT ACTIVITIES 27
4.1 Methodology 27
4.2 Annual Fuel Load Reduction and Fire Management Activities 36
4.3 Vegetation Management Activities (Years 1 through 5) 36
4.3.1 Serpentine Outcrop Weeding 37
4.4 Near-Term Special Projects (Years 1 through 5) 38
4.4.1 Special-Status Plant Species Surveys and Mapping 38
4.4.2 Comprehensive Vegetation Mapping Update 39
4.4.3 Sudden Oak Death Baseline Inventory and Management Plan 39
4.4.4 Maintenance Agreements for Work in Aquatic Resources 40
4.4.5 Replacement or Installation of Open Space Signage 41
4.5 Monitoring, Documentation, and Data Management 42
4.6 Cost Summary 43
5.0 REFERENCES 46

APPENDICES

A: OPEN SPACE VEGETATION MANAGEMENT GUIDELINES FOR HOMEOWNERS

FIGURES AND TABLES

FIGURES

Figure 1: Open Space Area Overview 4

TABLES

Table A: Open Space Parcels Owned and Managed by the Town of Tiburon 3
Table B: Vegetation Removal Activities 2015-2020 7
Table C: Recommended Treatment Calendar for Woody Invasive Plants 12
Table D: Recommended Treatment Calendar for Selected Herbaceous Invasive Plants 13
Table E: Prioritization of Management Activities 26
Table F: Annual Fuel Load Reduction and Fire Management Activities 29
Table G: Vegetation Management Activities (Years 1 through 5) 30
Table H: Near-Term Special Projects (Years 1 through 5) 35
Table I: Vegetation Treatment Data Collection 43
Table J: Estimated Vegetation Treatment Costs 44
Table K: Estimated Short-Term Implementation Plan Costs 45

1.0 OVERVIEW

The Town of Tiburon (Town) owns and manages approximately 250 acres of open space, which is widely distributed throughout the Tiburon Peninsula. Many of the open space parcels are isolated or not otherwise contiguous to other open space parcels; others are clustered and form a contiguous block of open space, especially in the Middle Ridge Area. Nearly all of the parcels were either purchased outright by the Town for preservation purposes or were acquired as a result of open space dedications required by the Town for new development projects.

In 2005, the Town Council recognized the need to balance future acquisition with ongoing management of existing open space lands and established an open space management reserve fund. Each year since that time, the Town has appropriated and expended capital improvement funds for open space management purposes. In 2008, the Town hired LSA to prepare an Open Space Resource Management Plan (OSRMP) to help prioritize the Town's available resources for open space management. The Town adopted the OSRMP in 2010 and, since that time, has used it to guide the management of the open space lands. Consistent with the OSRMP, the Town annually clears and repairs overgrown fire roads, removes invasive plants to reduce fire fuel loads, and has initiated invasive plant removal in areas with rare and endangered plant species.

This Short-Term Implementation Plan ("STIP" or "Plan") reflects a review of the management priorities and actions recommended in the OSRMP and provides necessary updates to help the Town prioritize and schedule near-term management activities over the next 5 years consistent with the OSRMP.

1.1 PLAN PURPOSE

The purpose of this STIP is to achieve the following objectives:

1. **Summarize the management activities conducted by the Town** since the adoption of the OSRMP and the general process for scheduling and implementing these management activities (**Section 2.0**).

2. **Identify any major changes in the environmental setting** (vegetation, sensitive natural resources) **and recommended treatment methods** based on current conditions or best management practices (**Section 3.0**).

3. **Re-establish the prioritization categories for management activities** previously specified in the OSRMP, and provide any clarifications or minor revisions based on current conditions, processes, or protocol (**Section 3.0**).

4. **Identify the specific projects, programs, or management actions** to be implemented by the Town over the next 5 years and beyond consistent with the OSRMP and based on current conditions (**Section 4.0**).

5. **Provide an annual schedule** that specifies the recommended activities for implementation within the STIP duration, as well as any projects or programs for further study (**Section 4.0**).

6. **Specify any recommended monitoring of management actions** or follow-up work and the implementation timing (**Section 4.0**).

1.2 TIBURON OPEN SPACE LANDS

1.2.1 Location

Tiburon, an incorporated town in Marin County, California, occupies most of the Tiburon Peninsula, which extends south into the San Francisco Bay approximately 7 miles north of San Francisco (**Figure 1**). Primary access to Tiburon is from U.S. Highway 101, which connects with San Francisco to the south and San Rafael and Sonoma County to the north. Tiburon Boulevard, the primary arterial, provides access to the downtown area, civic facilities, and the majority of the homes and businesses located within the Town limits. Paradise Drive, an alternative access route, extends along the eastern boundary of the peninsula through largely unincorporated areas within the Town's planning area.

The Town owns and manages approximately 250 acres of open space distributed amongst 21 parcels (**Table A**, **Figure 1**). Although the open space parcels differ widely in regards to size, vegetation, and use, many of the parcels are located on the Tiburon Ridge, which bisects the length of the peninsula. Some open space parcels are not easily accessible and are seldom used by the public, have little recreational or biological value, and act mostly as visual or physical buffers. Other open space parcels have significant recreational and/or biological value, contain well-used public trails (including portions of the Tiburon Ridge Trail), and form significant visual buffers and/or greenbelt separators between neighborhoods. Many of the open space parcels abut developed neighborhoods and can be a source of fuel loading for wildland fires.

Table A: Open Space Parcels Owned and Managed by the Town of Tiburon

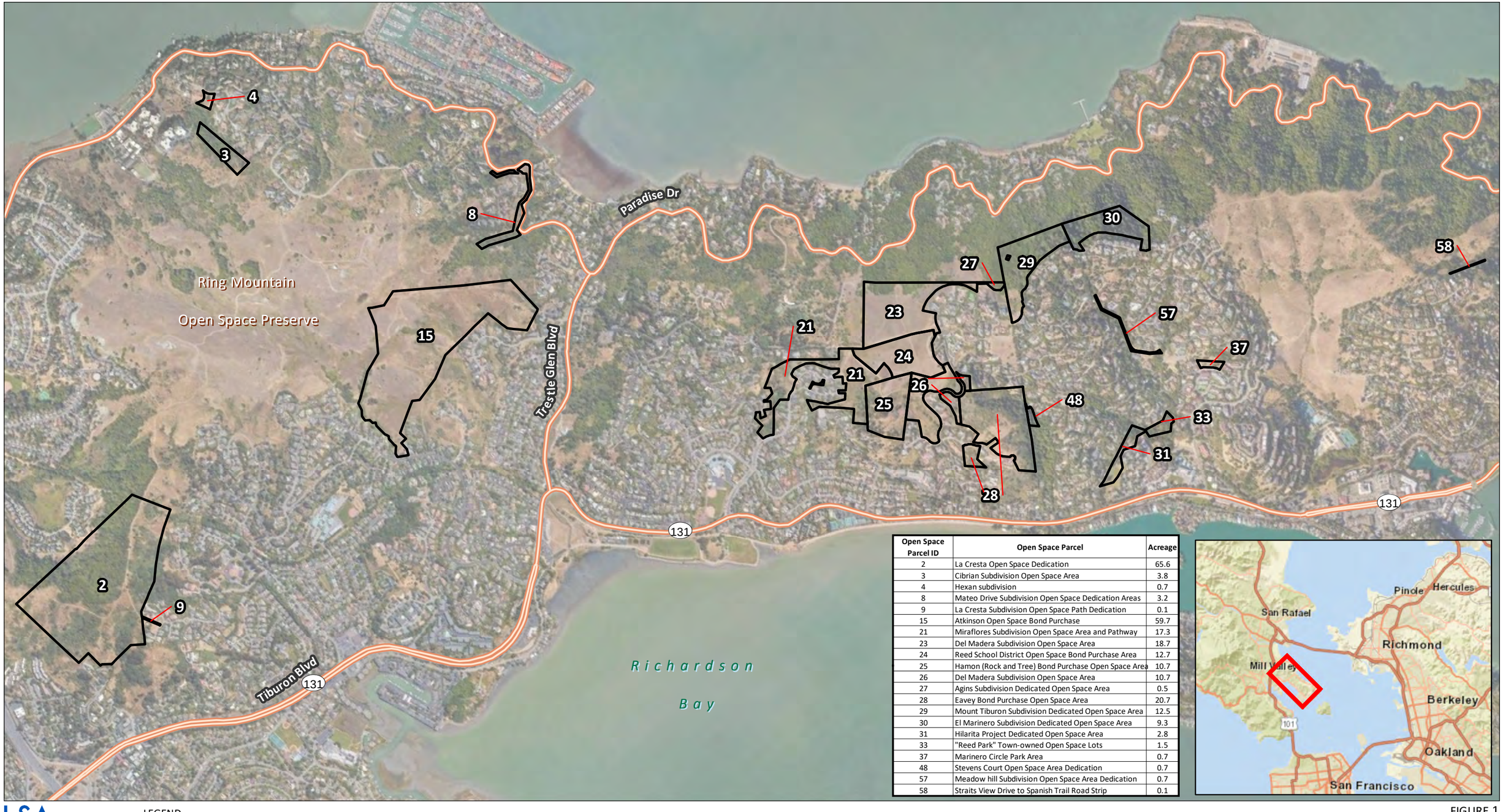
Open Space Parcel ID	Open Space Parcel	Acreage
2	La Cresta Open Space Dedication	65.6
3	Cibrian Subdivision Open Space Area	3.8
4	Hexan Subdivision Open Space Area	0.7
8	Mateo Drive Subdivision Open Space Dedication Areas	3.2
9	La Cresta Subdivision Open Space Path Dedication	0.1
15	Atkinson Open Space Bond Purchase	59.7
21	Miraflores Subdivision Open Space Area and Pathway	17.3
23	Del Madera Subdivision Open Space Area	18.7
24	Reed School District Open Space Bond Purchase Area	12.7
25	Hamon (Rock and Tree) Bond Purchase Open Space Area	10.7
26	Del Madera Subdivision Dedicated Open Space	10.7
27	Agins Subdivision Dedicated Open Space Area	0.5
28	Eavey Bond Purchase Open Space Area	20.7
29	Mount Tiburon Subdivision Dedicated Open Space Area	12.5
30	El Marinero Subdivision Dedicated Open Space Area	9.3
31	Hilarita Project Dedicated Open Space Area	2.8
33	"Reed Park" Town-owned Open Space Lots	1.5
37	Marinero Circle Park Area	0.7
48	Stevens Court Open Space Area Dedication	0.6
57	Meadowhill Subdivision Open Space Area Dedication	0.7
58	Straits View Drive to Spanish Trail Road Strip	0.1

1.2.2 OSRMP Background

The 2010 OSRMP provides an inventory and description of each open space area managed by the Town; identifies the management issues associated with each open space area; and provides management recommendations and prioritization suggestions for the most effective and efficient use of the Town's resources available for open space management.

The OSRMP addresses several key issues including maintaining the biological resource values, reducing invasive and non-native species, reducing fire prone vegetation, addressing passive recreational use, and repairing areas experiencing erosion. The primary emphasis of the OSRMP is the strategic reduction or removal of invasive species. French broom (*Genista monspessulana*) is the most abundant and widespread non-native invasive species throughout the open space lands. The management of French broom, as well as other problematic non-native invasive species, largely addresses the following management priorities identified in the OSRMP:

- Reduce fire hazards on open space;
- Reduce risk of wildfire;
- Preserve native species, including special-status species, and sensitive habitats; and
- Control/reduce non-native species and weeds.



Open Space Parcel ID	Open Space Parcel	Acreage
2	La Cresta Open Space Dedication	65.6
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4	Hexan subdivision	0.7
8	Mateo Drive Subdivision Open Space Dedication Areas	3.2
9	La Cresta Subdivision Open Space Path Dedication	0.1
15	Atkinson Open Space Bond Purchase	59.7
21	Miraflores Subdivision Open Space Area and Pathway	17.3
23	Del Madera Subdivision Open Space Area	18.7
24	Reed School District Open Space Bond Purchase Area	12.7
25	Hamon (Rock and Tree) Bond Purchase Open Space Area	10.7
26	Del Madera Subdivision Open Space Area	10.7
27	Agins Subdivision Dedicated Open Space Area	0.5
28	Eavey Bond Purchase Open Space Area	20.7
29	Mount Tiburon Subdivision Dedicated Open Space Area	12.5
30	El Marinero Subdivision Dedicated Open Space Area	9.3
31	Hilarita Project Dedicated Open Space Area	2.8
33	"Reed Park" Town-owned Open Space Lots	1.5
37	Marinero Circle Park Area	0.7
48	Stevens Court Open Space Area Dedication	0.7
57	Meadow hill Subdivision Open Space Area Dedication	0.7
58	Straits View Drive to Spanish Trail Road Strip	0.1

LSA

LEGEND

Open Space Parcels

0 660 1320
FEET

SOURCE: Aerial Imagery from the County of Marin

I:\TOT2101\GIS\Maps\Figure 1_Open Space Area Overview.mxd (9/14/2021)

FIGURE 1

Short-Term Implementation Plan for the
Town of Tiburon Open Space Resource Management Plan

Open Space Area Overview

2.0 HISTORY OF OPEN SPACE MANAGEMENT AND CURRENT PRACTICES

The Town Council established its Open Space Management reserve fund in 2005. Each year since, the Town has appropriated and expended capital improvement funds for open space management purposes. Beginning in 2010, following the adoption of the OSRMP, the Town began implementing vegetation management activities in accordance with the priorities established in the OSRMP, as well as based on input from the Tiburon Fire Protection District (FPD), residents with properties abutting the open space lands, and available Town resources. This section of the STIP summarizes the general process by which the Town implements the OSRMP and the primary management activities that have occurred since the adoption of the OSRMP.

2.1 GENERAL PROCESS AND CURRENT PRACTICES

The Town Department of Public Works (DPW) is responsible for implementing the OSRMP. The DPW references Appendix A of the OSRMP to develop funding and implementation plans for the management of the Town's open space lands. The ongoing short-term and long-term maintenance strategies are fine-tuned based on specific open space management needs, local demands, and existing budgets.

Work areas are determined annually based primarily on the prioritization of management activities in Appendix A of the OSRMP, as well as based on input from the Tiburon FPD. The FPD advises on management actions that are necessary to protect public safety and allow for firefighting personnel and equipment access. DPW staff annually tour the open space lands with the Deputy Fire Marshall to review fire road conditions and defensible spaces within the open space-urban interface areas. Based on this annual review, clearing non-native invasive vegetation from fire roads, particularly in the Middle Ridge Area, is typically a primary focus of the scheduled annual management activities. The Town also follows up with individual property owners, as needed, regarding defensible space clearing requirements, as described below.

The Town clears invasive vegetation from fire roads and within adjacent open space areas using non-chemical solutions (e.g., trimming/mowing, hand removal, and mechanical treatment). Typically, the Town supervises spring and fall/winter work crews staffed by the Conservation Corps North Bay for vegetation removal in non-sensitive areas, and hires consultants or specialists to conduct or oversee work in sensitive habitat. Town DPW staff also assist with the implementation of management activities as resources allow (e.g., removal of bamboo [*Bambusa* spp.] and pampas grass [*Cortaderia selloana*] within Parcel 26 initiated by the Town in summer 2021).

The Town DPW also takes into consideration input from the community when scheduling maintenance activities and coordinates with individual property owners and neighborhood or property owner associations for privately funded vegetation clearing activities on the open space lands to ensure consistency with the OSRMP. For example, California Public Resources Code Sections 4290 and 4291 require that property owners create a low fuel defensible space zone of 100 feet from habitable structures on their property. The Town's vegetation management staff person with assistance from a contracted inspector verifies that property owners are removing hazardous vegetation. To help property owners meet this requirement, the Town DPW issues a no fee

encroachment permit that allows for the cutting of grass or removal of woody vegetation on adjacent open space land located within 100 feet of any residential structure (**Appendix A**). Consistent with the Town's Open Space Rules and Regulations (Title V, Chapter 18 of the Tiburon Municipal Code), vegetation removal in any open space area is prohibited without prior written permission of the Town Manager or Director of Public Works.

The Town's current annual operating budget for the implementation of the OSRMP is approximately $120,000, based on general funds and Measure A Open Space and Parks Initiative funds (Marin County Ordinance 3586). Currently, the Town DPW clears fire roads on open space lands utilizing the operating budget for the OSRMP in addition to prioritizing the implementation of other vegetation management activities specified in the OSRMP. The FPD has recently acquired grant funding for public safety and fire prevention activities that may be utilized for vegetation removal from fire roads within the open space lands. On a year-to-year basis, the DPW will continue to work with the FPD to determine whether FPD resources can be allocated to vegetation management in the open space lands.

2.2 VEGETATION MANAGEMENT ACTIVITIES CONDUCTED BETWEEN 2015 AND 2020

The Town annually manages vegetation within the open space lands to reduce fire hazards and protect natural resources. **Table B** summarizes the primary vegetation management activities that the Town has conducted since 2015. Vegetation management within the Middle Ridge Area (Parcels 21, 23, 24, 25, 26, and 28) is typically a primary focus due to the proximity of these parcels to residential development, their high recreational use, and/or presence of sensitive biological resources. The Town typically conducts most vegetation management in the spring on the Middle Ridge. In the fall, the Town conducts follow-up/focused treatments within areas addressed in the spring and in other areas based on OSRMP priorities or existing need.

As referenced in **Section 2.1** above, other vegetation management activities within the open space lands are also conducted by private entities with Town approval. For example, the Mateo Drive Property Owner Association recently hired a contractor to conduct vegetation removal within neighborhood open space areas, including Parcel 8. These types of activities, including vegetation clearing within 100-foot defensible space areas surrounding private residential structures, are conducted by property owners on a continual basis and are not reflected in **Table B**.

While vegetation management activities are the primary expenditure of the Town's open space management funds, the Town also initiates planning activities related to the open space lands. In 2017, the Town hired a consultant to prepare an Initial Study under the California Environmental Quality Act (CEQA) for hand weeding within special-status plant habitat on the Middle Ridge.[1]

[1] Town of Tiburon, 2018. Initial Study/Negative Declaration for the Weeding of the Tiburon Open Space for Protection of Sensitive Plants Project. January.

Table B: Vegetation Removal Activities 2015-2020

Year	Location	Activities
2015	Parcel 4, Hexan Subdivision Open Space Area	French broom removal
	Parcel 21, Miraflores Subdivision Open Space Area and Pathway	Pampas grass and bamboo removal
	Parcel 25, Hamon (Rock and Tree) Bond Purchase Open Space Area	Pampas grass, bamboo, and French broom removal in and around the fire road
	Parcel 26, Del Madera Subdivision Dedicated Open Space	Pampas grass and French broom removal in and around the fire road
	Parcel 26, Del Madera Subdivision Dedicated Open Space / Gilmartin Drive	Vegetation removal along Gilmartin Drive
	Parcel 37, Marinero Circle Park Area	Italian stone pine removal
2016	Parcel 21, Miraflores Subdivision Open Space Area and Pathway	Pampas grass removal
	Parcel 26, Del Madera Subdivision Dedicated Open Space / Gilmartin Drive	Harding grass, French broom, bamboo, and pampas grass removal
	Parcel 28, Eavey Bond Purchase Open Space Area	French broom removal
2017	Parcel 25, Hamon (Rock and Tree) Bond Purchase Open Space Area / Gilmartin Drive and Hacienda Fire Road	French broom and pampas grass removal; vegetation removal along Gilmartin Drive
	Middle Ridge Area	French broom and pampas grass removal throughout the Middle Ridge open space parcels and along Gilmartin Drive
	Parcel 15, Atkinson Open Space Bond Purchase	French broom and pampas grass removal along the fire road
	Parcel 21, Miraflores Subdivision Open Space Area and Pathway	French broom and pampas grass removal from within 100 feet of homes and along fire road
	Parcel 25, Hamon (Rock and Tree) Bond Purchase Open Space Area / Hacienda Fire Road	French broom removal along Hacienda fire road; removal of three pine trees
2018	Middle Ridge Area	French broom and pampas grass removal; hand removal of grasses within serpentine outcrops (Tiburon jewelflower habitat); fell dead trees; and remove dead and downed woody materials
	Parcel 21, Miraflores Subdivision Open Space Area and Pathway	French broom removal
2019	Middle Ridge Area Parcel 21, Miraflores Subdivision Open Space Area and Pathway Parcel 28, Eavey Bond Purchase Open Space Area	French broom and pampas grass removal with a primary focus on areas surrounding fire roads
2020	Parcel 28, Eavey Bond Purchase Open Space Area	Non-native invasive vegetation removal
	Parcel 4, Hexan Subdivision Open Space Area Parcel 8, Mateo Drive Subdivision Open Space Dedication Areas	French broom and pampas grass removal with a primary focus on areas surrounding fire roads
	Parcel 25, Hamon (Rock and Tree) Bond Purchase Open Space Area	Non-native invasive vegetation removal
	Parcel 26, Del Madera Subdivision Dedicated Open Space	Non-native invasive vegetation removal

Source: Town of Tiburon Department of Public Works (2021).

3.0 OPEN SPACE RESOURCE MANAGEMENT PLAN UPDATES

This section identifies any major changes in the environmental setting since the preparation of the 2010 OSRMP and provides updated recommended non-native invasive plant removal methods for select species based on current site conditions and best management practices (BMPs). Minor revisions to the recommended management activity priorities from the OSRMP are also included in this section. The Town has not acquired any new open space parcels since the preparation of the OSRMP.

3.1 VEGETATION AND SENSITIVE NATURAL RESOURCES

The vegetation of the open space parcels is diverse and ranges from various types of woodland to grassland communities. The most common types are grassland vegetation, including native grassland, non-native grassland, and serpentine grassland, and oak woodland, coyote brush scrub, and French broom scrub. Section 2.0 of the OSRMP describes the vegetation communities within the open space lands, including the dominant non-native invasive and special-status plant species. Figures 2 through 12 of the OSRMP depict the dominant vegetation communities and invasive plant infestations within each parcel, as well as sensitive natural resources such as watercourses, wetlands, and habitat for rare plants.

LSA staff conducted a 1-day reconnaissance field survey on May 10, 2021 to "spot check" priority open space management areas where conditions may have changed since the previous comprehensive surveys conducted by LSA in 2010. During the reconnaissance field assessment, LSA documented any significant changes in vegetation and habitats that were observed (e.g., French broom infestations), and any fire safety, public access and use, or other maintenance issues relevant to the preparation of this STIP. During this visit, LSA also met with Eva Buxton, Tiburon resident, botanist, and contributor to the OSRMP, to review sensitive habitat areas within the North Middle Ridge Management Area and obtain input on issues related to the preservation of special-status plant species. LSA visited the following open space areas:

- Parcels 21, 23, 24, 25, and 26 (North Middle Ridge Management Area),
- Parcel 28 (South Middle Ridge Management Area);
- Parcels 29 and 30 (Mount Tiburon/El Marino Management Area);
- Parcel 2 (La Cresta Open Space Management Area);
- Parcel 15 (Atkinson Open Space Bond Purchase); and
- Parcel 8 (Mateo Drive Subdivision Open Space Dedication Areas)

Due to time limitations, LSA visited portions of these parcels in most cases. LSA prioritized the field review of the North Middle Ridge Management Area due to the high visitation within this area and the concentration of high-value habitat for special-status plant species, as well as the extent of previous vegetation removal in this area (described in **Section 2.2**). LSA visited Parcel 8 in order to provide feedback to the Town in advance of vegetation management activities funded by the Mateo Drive Property Owner Association and scheduled for summer 2021. Access to parcels 2, 28, 29, and

30 was also attempted to record any observations of sudden oak death or dead trees. However, access to parcels 28, 29, and 30 was limited due to steep topography and extent of woody vegetation.

The sections below summarize the current conditions of the open space lands related to invasive plant species and special-status plant species, and provide updated vegetation management recommendations for the most abundant or problematic species within the Middle Ridge Area or those that were not previously addressed in the OSRMP. Sudden oak death is also addressed in a more comprehensive manner to account for increasing community awareness and pathogen presence in Marin County since the OSRMP was prepared.

3.1.1 Special-Status Plant Species

As referenced in the OSRMP, some of the Town open space parcels support documented populations of special-status plant species, including Tiburon jewelflower (*Streptanthus glandulosus* ssp. *niger*), Tiburon paintbrush (*Castilleja affinis* var. *neglecta*), Marin western flax (*Hesperolinon congestum*), Tiburon buckwheat (*Erigonum luteolum* var. *caninum*), marsh zigadenus (*Toxicoscordion fontanum*), and Oakland star tulip (*Calochortus umbellatus*). Tiburon jewelflower (**Photo 1**), Tiburon paintbrush, and Marin western flax—all listed under the federal Endangered Species Act and California Endangered Species Act—are known to occur on serpentine substrates in the North Middle Ridge Management Area (Parcels 21, 23, 24, 25, and 26). Tiburon jewelflower is only known from two occurrences on the Tiburon peninsula, one of them being within the Town's North Middle Ridge open space area. Tiburon buckwheat, which has a California Rare Plant Rank (CRPR) of 1B (*plants rare, threatened, or endangered in California and elsewhere*) occurs in the same habitat. Marsh zigadenus, which has a CRPR of 4 (*plants of limited distribution or infrequent throughout a broader area in California*) also occurs within the Middle Ridge, but within serpentine wetland habitat (Parcel 26). This wetland habitat has been invaded by invasive plants, including bamboo, pampas grass, and French broom.

Photo 1: Tiburon jewelflower, as observed on May 10, 2021 along a fire road on the Middle Ridge, is known from only two locations in Tiburon.

Threats to these species—particularly where they occur in the high-recreational use Middle Ridge areas—include ubiquitous non-native grasses (e.g., wild oats [*Avena fatua*]) that grow on the serpentine outcrops, unauthorized trails that cut through habitat, and other non-native invasive plant species that encroach into habitat (e.g., French broom, pampas grass, Harding grass [*Phalaris aquatica*], and bamboo). In 2012, the California Native Plant Society (CNPS) allocated funding for a

volunteer, under the supervision of botanist Eva Buxton, to hand weed non-native grasses within the serpentine outcrop areas. In 2018, a contractor hired by the Town also conducted limited weeding of annual grasses. While follow-up monitoring and documentation of any changes in the subsequent population numbers of Tiburon jewelflower in response to the weeding was not formally conducted, rare plant populations on the Middle Ridge—including Tiburon jewelflower populations—were previously mapped in 2009 by Eva Buxton and shared with the U.S. Fish and Wildlife Service (USFWS) for recovery plan efforts. Limited informal rare plant surveys within the Middle Ridge have since been conducted by local volunteers.

Based on LSA's review of the California Natural Diversity Database (CNDDB), no new special-status plant occurrences have been recorded within the Town's open space lands since the OSRMP was prepared.[2] Although LSA did not conduct rare plant surveys during the reconnaissance survey on May 10, 2021, several of these species—including Tiburon jewelflower (see **Photo 1**), Tiburon paintbrush, Marin dwarf flax, and Tiburon buckwheat—were observed in bloom within Parcels 24, 25, and 26. Tiburon paintbrush was especially abundant below the top of the escarpment on these parcels. A local volunteer counted between approximately 550 and 600 Tiburon jewelflower plants in July 2021.[3]

3.1.2 Invasive Species and Noxious Weeds

Non-native invasive plant species are the primary management issue on the open space parcels because they increase the fire hazard and threaten sensitive resources. Infestations of invasive weeds are found within the majority of the Town's open space parcels. Without proper control, these aggressive weeds increase the possibility of wildfire near residential developments, damage wildland ecosystems, and endanger protected species. The OSRMP addresses 18 non-native invasive species (see Sections 2.2, 3.4, and Figures 2 through 12 of the OSRMP). The dominant non-native invasive plant within the open space lands is French broom.

While a comprehensive field review and update of the OSRMP vegetation mapping was not conducted, LSA's reconnaissance survey and review of aerial imagery indicate that conditions are generally similar to when the OSRMP was prepared in 2010. Invasive plant populations in the North Middle Ridge Management Area, where the majority of vegetation management activities are conducted by the Town, have been reduced in some locations (e.g., French broom along the fire road that bisects Parcels 25 and 26 and along Gilmartin Drive) or fully cleared (e.g., pines in some areas). However, as evidenced by the overall similar existing conditions compared to 2010, effective invasive plant management requires follow-up monitoring and weed removal work during succeeding years. For example, without effective follow-up work, French broom that has been cut quickly regrows into dense thickets that impede access and threaten habitat. Thus, monitoring of

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2 California Department of Fish and Wildlife (CDFW), 2021. Query of the California Natural Diversity Database for special-status species occurrences within 1 mile of the Town's open space. Biogeographic Data Branch, California Department of Fish and Wildlife, Sacramento. Accessed April 26, 2021.

3 Buxton, Eva, 2021. Botanist. Personal Communication (email) with LSA, August 2.

previous treatment areas and follow-up activities must be recognized and accounted for when planning the implementation of the management activities (see **Section 4.0**).

3.1.2.1 Herbicide Use

Section 3.2 of the OSRMP describes various treatment methods that may be used by the Town, including hand labor, mechanical treatment using different types of equipment to cut the vegetation, herbicides, and prescribed burning. Consistent with Marin County's approach to vegetation management on open space lands, the most commonly employed treatment by the Town is hand or mechanical cutting.

In integrated pest management (IPM) programs, herbicides are typically used only after monitoring indicates they are needed, and treatments are made with the objective of removing only the target species. Consistent with the IPM approach, it is important to select the least-toxic, low-residual herbicide that is effective against the target weed, and to apply it in a judicious manner using spot treatments rather than broadcast application. Historically, herbicide use within the Town's open space lands has been extremely limited and used primarily for bringing infestations under control to effectively manage the area with non-chemical solutions over the long term. For example, limited application of herbicides to cut vegetation (e.g., cut tree stumps) has been employed by the Town in the past to ensure that only the targeted species receives the herbicide.

In March 2020, the Town approved an IPM policy to reduce reliance on and minimize use of pesticides that impact human health, non-target organisms, and the environment. [4] The Town's IPM policy identifies pesticides falling into one of four categories, based on the commensurate toxicity categories in Section 156.64 of Title 40 of the Code of Federal Regulations: "Category I", "Category II", Category III", and "Category IV". Category I pesticides are the most toxic, with labels bearing the signal word 'Danger,' and Category IV pesticides are the least toxic, with labels either not containing a signal word or the word 'Caution.' The main goal of the Town's IPM policy is to eliminate the use of Category I and II pesticides and minimize the use of Category III and IV pesticides.

Consistent with the IPM policy, the Town will use pesticides only when necessary, such as when all other non-pesticide means of weed control have been utilized or have been determined to be infeasible in a particular application due to site factors or ability of staff to provide a particular function or service. Under these circumstances, the Town will select a pesticide that is both effective and least toxic. Currently, the only pesticide approved for use by the Town is LifeLine© (glufosinate-ammonium), however other Category III (Caution) herbicides may be used if approved by the Director of Public Works providing that the requested herbicide complies with the IPM policy.

3.1.2.2 Updated Treatment Recommendations

Updated invasive plant treatment recommendations are provided below for the most widespread or frequently encountered species (e.g., French broom and pampas grass), as well as for those that

[4] Tiburon Public Works Department, 2020. Town of Tiburon Integrated Pest Management Policy. March 23.

were either not addressed in the OSRMP (Harding grass) or have the potential to threaten habitat for special-status plant species (e.g., bamboo and pride of Madeira [*Echinum candicans*]).

As described above, the Town's IPM policy currently only allows the use of LifeLine© for chemical control. Based on input from Joseph DiTomaso, a leading weed science researcher at the University of California, Davis College of Agricultural and Environmental Sciences, glufosinate-ammonium is not effective for control of woody species and has limited effectiveness on perennial herbaceous species. [5] Marin County Parks and Open Space District staff also confirmed that based on their experience, there are currently no known organic herbicides that provide effective control of perennial or woody plant species.[6] Thus, treatment recommendations for the invasive plant species described below are limited to non-chemical control methods.

To aid the Town in the scheduling of vegetation management activities, **Tables C** and **D** provide treatment timing calendars for selected woody and herbaceous invasive species, respectively, that are addressed in the OSRMP. Treatment schedules in Tables C and D below are based on cultural or mechanical control methods such as hand pulling, digging, or hand cutting.

Table C: Recommended Treatment Calendar for Perennial Invasive Shrubs

Plant	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
French Broom	1	1	1	1	3	3	3				1	1
Himalayan Blackberry	1			1	1	1	2	3	3			1
Pride of Madeira	1	1	1	1	1	2	2	2	3	3	3	1

1 = Conduct treatments during this time to avoid spreading seed. Treatment most likely to control pest plant late in this season, closer to seed set. Includes removal of non-blooming shrubs during the wet season, post-seed set.
2 = Use caution; treatments may spread seed if not contained
3 = Use extreme caution or avoid treatments; seed spread likely if not contained

Jepson Flora Project (eds.) 2021. Jepson eFlora, https://ucjeps.berkeley.edu/eflora/

Marin County Parks, Marin County Open Space District. 2015. Vegetation and Biodiversity Management Plan.

DiTomaso, Joseph M., G. Kyser, S. Oneto, R. Wilson, S. Orloff, et. al. 2013. Weed Control in Natural Areas in the Western United States. University of California Weed Research and Information Center. Davis, CA.

[5] DiTomaso, Joseph, 2021. University of California, Davis. Personal Communication (email) with LSA, September 9.

[6] Knecht, Katherine, 2021. Integrated Pest Management Specialist for Marin County Parks and Open Space District. Personal Communication (email and phone) with LSA, September 8.

Table D: Recommended Treatment Calendar for Selected Herbaceous Invasive Plants

Plant	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Artichoke thistle				1	3	3	3					
Bull thistle					1	2	3	3	3	3		
Fennel	1	1	1	1	2	2	3	3	3	3	1	1
Harding grass				1	1	3	3	3				
Italian thistle		1	1	3	3	3	3					
Pampas grass	3	3	3			1	1	1	3	3	3	3
Purple starthistle	1	1	1	1	1	2	3	3	3	3	3	
Yellow starthistle					1	1	2	3	3	3		

1 = Conduct treatments during this time to avoid spreading seed. Treatment most likely to control pest plant late in this season, closer to seed set.
2 = Use caution; treatments may spread seed if not contained
3 = Use extreme caution or avoid treatments; seed spread likely if not contained

Jepson Flora Project (eds.) 2021. Jepson eFlora, https://ucjeps.berkeley.edu/eflora/

Marin County Parks, Marin County Open Space District. 2015. Vegetation and Biodiversity Management Plan.

DiTomaso, Joseph M., G. Kyser, S. Oneto, R. Wilson, S. Orloff, et. al. 2013. Weed Control in Natural Areas in the Western United States. University of California Weed Research and Information Center. Davis, CA.

French Broom and Scotch Broom

French broom is the most abundant invasive species within the Town's open space parcels. Management of French broom provides a challenge because of its abundance, its ability to spread, and the need for follow-up treatments. Scotch broom (*Cytisus scoparius*) occurs on Ring Mountain (i.e., Parcel 2, La Cresta Open Space Dedication).

French broom and scotch broom are upright perennial shrubs that share similar biology and growth-habits. Plants flower between March and May and are common in disturbed areas such as roadsides and clear cuts.[7] Brooms spread primarily by seed dispersion and the seeds are viable in soil up to 30 years.[8] Plants of both species grow rapidly and form dense stands, which inhibit growth of most other plant species, and accumulation of woody debris creates a fire hazard. Shrubs may live for up to 30 years.

Control measures must address both removal of standing plants and eventual depletion of the seed bank. Cutting French broom when it is first in flower may help reduce the seed supply that year. A woody taproot makes plants relatively easy to pull, especially when the soil is moist. Because broom can resprout from root crowns, repeated treatments are required to exhaust root reserves. Older plants may not re-sprout after cutting, although younger plants will. To reduce resprouting, broom may be mowed in late summer when soils are dry. Because of the seedbank, monitoring removal

7 Calflora. 2021. Calflora: Information on California plants for education, research and conservation. [Web application]. 2021. Berkley, California: The Calflora Database [a non-profit organization]. https://www.calflora.org/. Accessed on June 1, 2021.

8 DiTomaso, J.M. et al. 2013. Weed Control in Natural Areas in the Western United States. Weed Research and Information Center, University of California.

sites to locate and kill new seedlings is essential. Location and retreatment of resprouts is also necessary. Sites should be examined once a year, when the seed germination period ends in late spring, for 5 to 10 years and every 2 years thereafter.[9] When resources are limited, resources should be concentrated on larger, mature, seed-producing broom first, before spending time on younger plants. Priority should also be given to removal of "outlier" stands of broom that have the potential to cause infestations of new non-infested areas.

While prescribed burning is effective in reducing the seed bank and treating dense monocultures, burning is not considered to be an effective control option on its own, as burning mature stands removes competing desirable vegetation, stimulates germination of broom seedlings, and releases nutrients into the soil. Burning is more effective when followed by an herbicide application, subsequent burnings, and/or revegetation with desirable species.[10]

Hand Labor Treatment. Hand pulling is best done on small stands of broom. When faced with dense and/or extensive stands of broom, it is best to divide them into grids (with flags, stakes, etc.) so that workers can thoroughly weed smaller areas before moving onto the next grid. The grid system also facilitates dividing work activities between those pulling and those removing the debris.

Hand pulling destroys young plants and seedlings, but for larger, mature plants, use of a "weed wrench" is recommended. This hand-operated tool acts as a lever to pull the entire plant out, including roots, so that resprouting does not occur. Various sizes of the tool are available to suit different size plants. To minimize disturbance on steep hillsides, remove plants in the spring when soils are moist. A claw mattock can be used for plants up to 13 feet tall. After the soil around the root is loosened, the claw is used to pull out the plant in the same way a claw hammer is used to pull out nails. However, the resultant soil disturbance tends to increase the depth of the seedbank. Wrench removal is labor-intensive, but can be used in most kinds of terrain and allows targeting of broom plants with low impact on desirable species in the area.

Cutting can be employed where broom infestations are difficult and dangerous to pull, especially where footing is uncertain. Cutting is an alternative that minimizes soil disturbance and involves tools such as brush cutters, power saws, axes, machetes, hand pruners, loppers, and clippers. Roots remain intact and are helpful in stabilizing soil on steep terrain. Repeated cutting is necessary to deplete the plant's energy reserves.

Cut stems close to the ground under maximum drought conditions to reduce their ability to resprout. The effectiveness of cutting depends on stem diameter, time of cut, and the age of the plant. For Scotch broom, its ability to resprout declines with age; Marin County Parks has also observed this in its treatment of French broom.[11] Cutting plants low during dry months (i.e.,

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9 Carla C. Bossard, John M. Randall, Marc C. Hoshovsky, Editors. 2000. Invasive Plants of California's Wildlands. University of California Press.

10 DiTomaso, J.M. et al. 2013. op. cit.

11 Minnick, Sarah, 2021. Marin County Parks, Vegetation and Fire Ecologist. Personal Communication (email) with Town of Tiburon, February 5.

after flowering in late July and August) can kill broom, whereas cutting prior to flowering, although effective in preventing another seed crop, may result in resprouts and little mortality.[12] Based on the experience of Marin County Parks, infestations of large/old broom may be cut in the fall (when soil is driest), with a return visit the next spring to remove only the cut stalks that are still alive with green sprouts, as well as any new seedlings and smaller plants that were not cut.[13] Avoid cutting shrubs during the rainy season (November to March) when resprouting is highest.

Pampas Grass

Pampas grass is a large perennial grass commonly found in disturbed areas along the California coast. This species is native to eastern South America and was originally introduced as an ornamental and for erosion control. Plants flower from late August through September, but occasionally into winter (i.e., through March), and reproduce only by seed, which are prolific and dispersed by wind and human activity. Because seeds are so small, a persistent seedbank does not accumulate, with seeds typically surviving for between 9 and 12 months.[14]

The use of hand tools such as shovels and Pulaskis to remove established clumps is considered a highly effective control strategy for pampas grass.[15] Serrated leaves require the use of gloves and protective clothing. It is important to remove the entire crown and top section of the roots to prevent resprouting, and removed plants should be immediately disposed of off-site to discourage re-rooting. A large chainsaw or weed eater can expose the base of the plant, allow better access for removal of the crown, and make disposal of the detached plant more manageable. Follow-up is required to check for resprouts.

Cutting and removing the inflorescence (i.e., when the plumes are still pink or purple) prior to seed maturation in late summer will also help to avoid seed dispersal. In coastal areas, such as Tiburon, seeds are typically produced between August and October.[16] However, plants that have had plumes removed may develop more plumes during the flowering season. Mechanical removal by heavy equipment, including excavators and backhoes, can be effective. However, these methods are labor and cost intensive depending on the size of the infestation and site conditions and the soil disturbance may promote reinvasion of the area by this invasive species or others.

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12 LSA Associates, 2009. East Bay Regional Park District Wildfire Hazard Reduction and Resource Management Plan. Prepared for the East Bay Regional Park District.

13 Minnick, Sarah, 2021. op. cit.

14 Watershed Project and California Invasive Plant Council. 2004. The Weed Workers' Handbook – A Guide to Techniques for Removing Bay Area Invasive Plants.

15 DiTomaso, J.M. et al. 2013. op. cit.

16 Watershed Project and California Invasive Plant Council. 2004. op. cit.

Bamboo

Bamboos are a diverse group of evergreen perennials in the grass family Poaceae, with more than 1,400 recognized species.[17] In general, bamboos have one of two growth patterns—'clumping' or 'running'—characterized by short and long rhizomes, respectively. Clumping bamboos tend to spread slowly, similar to a perennial grass, whereas running bamboos are known to be extremely fast growing and can exhibit invasive behavior given the right environmental conditions. Bamboo occurs at a few sites on the Middle Ridge, including within wetland habitat associated with serpentine substrates that provide habitat for federal and State-listed plant species (**Photo 2**).

Photo 2: Bamboo growing within a serpentine wetland in the Middle Ridge Area (Parcel 26, Del Madera Subdivision Dedicated Open Space) near Gilmartin Drive.

Effective control of bamboo consists of digging out the entire root and rhizome mass as thoroughly as possible, including fragments, with follow-up treatments of cutting new shoots to ground level. Most rhizomes occur in the top 6 to 18 inches of soil, with the potential to be up to 24 inches deep in sandy loose soils. Soils disturbed by digging should be seeded with native species, particularly forbs or perennial grasses. For removal of bamboo within sensitive habitat without soil disturbance, repeated cutting of the new shoots each spring will eventually deplete the energy reserves in the rhizomes. Without green leaves to photosynthesize and produce new energy, the rhizomes will no longer be able to send up new shoots. The rhizomes will be left behind but will rot away.

The American Bamboo Society does not recommend the use of herbicides for control of bamboo, likely because so much of the plant is underground.

[17] American Bamboo Society. 2021. Bamboo Invasiveness and Control Statement. https://bamboo.org/news-events/news/bamboo-invasiveness-and-control-statement. Accessed on June 1, 2021.

Pride of Madeira

Photo 3: Dense monoculture of pride of Madeira within Parcel 8 (Mateo Drive Subdivision Open Space Dedication).

Pride of Madeira is a long-lived perennial shrub native to Madeira, Macaronesia (the Azores Islands) that inhabits open dry slopes and bluffs.[18] This species was originally introduced as an ornamental plant that has since escaped cultivation. In coastal areas, flowering time is highly variable, ranging from February to October. As reflected in the OSRMP, this species was likely spread to the open space parcels from adjacent residential garden plantings (**Photo 3**). Local botanist, Eva Buxton, has observed an increase in the extent and number of individual plants within the Town's open space lands, particularly within the Middle Ridge area, since the implementation of the OSRMP in 2010.[19] During LSA's reconnaissance field survey on May 10, 2021, this species was observed on the Parcels 23 (Del Madera Subdivision) and 24 (Reed School District) closest to Gilmartin Drive, as well as along Gilmartin Drive below the fire road within Parcel 26 (Del Madera Subdivision Dedicated Open Space).

Very little scientific information is available regarding the impact of pride of Madeira on natural communities, however due to its high reproductive potential and potential for human-caused dispersal it has a California Invasive Plant Council (Cal-IPC) rating of Limited.[20]

Though management options for this species have not been formally developed (e.g., by Cal-IPC), mechanical control is recommended, and Marin County Parks and Open Space District staff have confirmed the effectiveness of mechanical control methods.[21] Branches of individual adult plants should be cut and the root balls dug out with a Pulaski or shovel. Flowering stalks with mature seeds should be cut and bagged prior to plant removal. Young plants can appear 30 feet from the parent plant. Seedlings should be pulled by hand the following year(s) in the vicinity of the removed parent plant.

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18 Ronald B. Kelley. 2012. *Echium candicans*, in Jepson Flora Project (eds.) *Jepson eFlora*. https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=77286. Accessed on June 1, 2021.

19 Buxton, Eva, 2021. Botanist. Personal Communication (email) with LSA, May 17.

20 California Invasive Plant Council. 2021. Plant profile of Echium candicans. https://www.cal-ipc.org/plants/profile/echium-candicans-profile/. Accessed on June 1, 2021.

21 Knecht, Katherine, 2021. op. cit.

Harding Grass

Harding grass is a perennial rhizomatous grass native to the Mediterranean region of Europe and was originally introduced for livestock forage and erosion control along roadways. This species is especially common in disturbed areas and along roadsides, and typically flowers from April – August.[22] Individual plants develop deep fibrous root systems that will expand via short rhizomes; however, the rhizomes do not develop clonal patches of new plants. Most reproduction is by seeds, which typically fall near the parent plant, however plants can also regenerate from pieces of rhizome under the right conditions. Seed soil life is short – generally less than 2 years.

Management recommendations for Harding grass are based on research conducted for control of Reed canary grass (*Phalaris arundinacea*), a closely related species. Hand pulling is practical only for small stands, as the entire population must be removed 2-3 times per year for 3-5 years to effectively deplete underground resources.[23] Clumps should be cut around the base and the roots removed. Roots longer than 2 inches must be removed or the plant could reestablish. Close mowing or clipping multiple times during the active growth period and late in the growing season (when plants are still green, generally late spring) can reduce plants vigor and may provide a suitable control strategy. However, mowing alone will prevent expansion but will not kill Harding grass.[24]

3.1.3 Sudden Oak Death

Sudden Oak Death (SOD) is a tree disease that kills some oak species and has had devastating effects on forests in 15 coastal counties in Northern and Central California and southwestern Oregon. SOD is caused by the plant pathogen *Phytophthora ramorum*. *P. ramorum* was introduced into California's natural landscape approximately 20 to 25 years ago when infected ornamental/nursery plants, such as rhododendrons and camellias (which carry the disease), were planted in the environment.[25] Marin County is within the 15-county SOD quarantine zone (as regulated by the California Department of Food and Agriculture [CDFA] and the U.S. Department of Agriculture [USDA], Animal and Plant Health Inspection Service [APHIS]).

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22 Riccardo M. Baldini. 2012. *Phalaris aquatica*, in Jepson Flora Project (eds.). *Jepson eFlora*. https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=37601. Accessed on June 1, 2021.

23 DiTomaso, J.M. et al. 2013. op. cit.

24 Watershed Project and California Invasive Plant Council. 2004. op. cit.

25 UC Berkeley Forest Pathology and Mycology Lab, 2021. What is Sudden Oak Death?: https://nature.berkeley.edu/matteolab/?p=1029. Accessed on August 13, 2021.

Tanoak (*Notholithorcarpus densiflorus*) and California bay laurel (*Umbellularia californica*) are the primary host species to SOD within Marin County and can transmit the disease to other trees and shrubs, including coast live oaks (*Quercus agrifolia*). Oaks are not infectious in nature and do not spread the disease further, but oak wood may be infectious if carried to an uninfested area. In California, foliar infections on bay laurel leaves are mostly responsible for spreading the disease.[26] However, while SOD threatens the survival of tanoak and oak species, bay laurel trees do not suffer mortality. SOD symptoms on California bay laurel can be recognized as a distinctive brown leaf tip. Although a definitive diagnosis of SOD can only be confirmed through laboratory testing, there are some signs on oaks that may indicate infection. These signs can include bleeding bark cankers, fungal charcoal-black globes growing on the bark (*Hypoxylon* spp.), and branch and twig dieback with leaves still attached. Yearly infection levels depend on the presence of spring rainfall. While tanoaks and bay laurels are infected yearly, oaks are normally infected only in years with abundant spring precipitation.[27]

Photo 1: Coast live oak symptomatic of SOD on Parcel 2 (La Cresta Open Space Dedication). Less steep parcels (such as Parcel 2) offer access to manage for SOD more effectively.

SOD is rampant within woodlands on Mount Tamalpais and in other areas of Marin County. In 2020, the "SOD Blitz" organized by the University of California Berkeley Forest Pathology and Mycology Lab surveyed 1,097 trees in Marin County; 219 of these trees were sampled for SOD. [28] Twenty-five percent of sampled trees tested positive for SOD and 37.6 percent of infected trees were symptomatic. The estimated true infection was 9.5 percent, an increase from 2019 when the true infection rate was 7.5 percent in Marin County. In Marin County, given the less than average rainfall amount in 2020 (53 percent of normal) and the greater than average rainfall for 2019 (well above 100 percent), SOD experts would have predicted an overall decline in infection rate. The increase in infection rate reveals the pathogen has been in Marin County long enough to become resilient to survive and proliferate despite lower precipitation.

Effects of SOD were previously observed by LSA in oak woodlands on the open space parcels and adjacent properties, as noted in the 2010 OSRMP. Based on LSA's May 2021 reconnaissance survey and review of recent aerial imagery for evidence of dead trees within inaccessible areas (e.g., Parcels 29 and 30), the disease is assumed to be present throughout the woodlands in the Town's open space areas. As reflected in the data collected as part of UC Berkeley's annual SOD Blitzes, the

26 Ibid.
27 Ibid.
28 UC Berkeley Forest Pathology and Mycology Lab, 2020. SOD Blitz 2020 Results: https://nature.berkeley.edu/matteolab/?page_id=5438. Accessed on August 5, 2021.

closest confirmed SOD infected California bay laurel (2020) is approximately 1 mile west of the La Cresta Open Space Dedication Area (Parcel 2). [29] Two additional bay laurel trees within the Tiburon Uplands, adjacent to Old Saint Hilary's Preserve, were confirmed to be infected in 2018. However, a comprehensive survey for SOD has not been conducted in Tiburon. Thus, the pathogen should be assumed present throughout the open space lands and proper precautions should be taken during vegetation clearing activities within or in proximity to oak woodland or host plants (see recommendations below in **Section 3.1.3.1**).

California bay laurel and coast live oak are dominant components of the woodland within the Town's open space. The 2010 OSMRP identified potential SOD in Parcels 2, 3, 28, 29, 30, and 48. While LSA was unable to access certain open space parcels with suspected tree dieback due to SOD (i.e., Parcels 28, 29, and 30) during our May 2021 reconnaissance survey, trees were symptomatic within the oak woodland in Parcel 2 (**Photo 4**). Some of the live oaks within this woodland are dead or in declining health. The leaves of California bay laurel trees were not examined for SOD symptoms, but signs of the infection were noted on some coast live oaks that were accessible during the May 2021 survey (bleeding bark cankers, fungal charcoal-black globes growing on the bark, and branch and twig dieback with leaves still attached). Samples for laboratory assessment were not collected during the survey.

3.1.3.1 Treatment Recommendations

Responses to managing SOD vary based on location/access, vegetation type, and severity of infestation. The difficulty of effective control of SOD is increased in areas where SOD has been well established and widespread in distribution. Marin County is known to be well infested with SOD. SOD in recently infected areas on the perimeter of its range would have different recommendations than those presented here.

On-the-ground vegetation removal can be somewhat effective at minimizing the spread of SOD. Vegetation management to control SOD is more feasible in accessible, less steep areas of the open space lands (e.g., Parcel 2, estimated average 36 percent slope). SOD is more difficult (if not impossible) to manage on steep inaccessible sites, such as Parcel 28 (estimated average 96 percent slope), Parcel 29 (estimated average 61 percent slope), and Parcel 30 (estimated average 72 percent slope). Very few, if any, recommendations can be made for steep inaccessible slopes. The Marin Municipal Water District (MMWD), which stewards 22,000 acres of watershed lands in Marin County, initiated the Mount Tamalpais Resilient Forest Project Phase I Pilot Study in 2015 to identify forestry practices with the potential to mitigate the negative impacts of SOD on a landscape scale. The method being evaluated by MMWD involves thinning and masticating understory brush and dead or diseased trees with a combination of heavy equipment and hand crews where slopes do not

[29] UC Berkeley Forest Pathology and Mycology Lab, 2021. SODMap Project: https://nature.berkeley.edu/matteolab/?page_id=755. Accessed on August 5, 2021.

exceed 30 percent.[30] The MMWD estimates initial Phase I treatment costs (understory thinning and dead/diseased tree removal) within accessible areas at approximately $12,300 per acre.[31]

Short-term management recommendations that should be implemented by the Town immediately include specific BMPs to prevent spread of SOD during vegetation pruning and removal activities within and adjacent to the open space lands. Recommended BMPs include: 1) sanitation pruning and removal of dead or dying trees (where accessible), 2) sanitization of tools between work areas where the pathogen or its host may be present, 3) removal of bay laurels, and potentially, 4) treatment of high value oaks with phosphonate injections.

The following BMPs should be shared with residents with properties that abut the open space lands and can be useful for residents or their contractors to refer to when clearing 100-foot defensible space. Sanitation pruning of dead branches and trees, along with making educated landscaping choices, will increase effective control of SOD. To help prevent the spread of SOD, landowners of properties bordering open space lands should query nurseries prior to purchasing ornamental plants to ensure the facility regularly conducts testing of incoming plants for SOD.

Sanitation Pruning and Removal of Dead or Dying Trees

As described above, since data indicate that non-oak foliar hosts, such as California bay laurel, actually spread the SOD pathogen, removing infected oak trees will likely have little or no impact on local disease levels and spread.[32] However, an important consideration with respect to any tree is whether it presents a hazard to life or property (i.e., its potential to do harm should it die or portions of it break off). SOD-related tree mortality also alters fuel loads and studies suggest that altered fuel profiles can influence subsequent fire behavior.[33] While the 2010 OSRMP indicates removal of dead trees should occur if dead trees are greater than 5 percent cover of oak woodland, this may not be feasible due to access constraints. Further, a comprehensive survey of oak woodland areas within the open space lands has not been conducted (see **Section 4.4.3**). Removal of any accessible trees should occur during the dry season and follow the decontamination protocol, as described below.

Pruning of oaks within accessible areas as part of ongoing vegetation removal activities will help to maintain tree health when removal of infested, infected, damaged, or rubbing branches (sanitation pruning) occurs in the dry season (late summer or fall). Thinning of tree crowns provides more light penetration, promotes drying to reduce foliar diseases, and can reduce the spread of pests within the tree and to adjacent trees. Oak pruning can coincide with removal of French broom, a highly

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30 Panorama Environmental, Inc. 2019. Marin Municipal Water District Biodiversity, Fire, and Fuels Integrated Plan. Prepared for the Marin Municipal Water District. October.

31 Ibid.

32 University of California Statewide Integrated Pest Management Program, 2010. *Pest Notes, Publication 74151, Sudden Oak Death*: http://ipm.ucanr.edu/PMG/PESTNOTES/pn74151.html. Accessed on August 13, 2021.

33 Metz, M. R., Varner, J. M., Simler, A. B., Frangioso, K. M., and Rizzo, D. M., 2017. Implications of Sudden Oak Death for Wildland Fire Management. *Forest Phytophthoras* 7(1):30-44.

invasive shrub within the open space lands, and is consistent with fuel management recommendations.

Being within the SOD quarantine zone, certain precautions are necessary to avoid the spread of the disease to trees through movement and disposal of all plant materials. Green waste and live infected plants pose the highest risk of spreading SOD. Disposal of plant material within the quarantine zone is not regulated, but if susceptible plant material is moved out of the quarantine zone, a permit from the county agricultural commissioner is needed.[34] Restrictions and exceptions are provided at the CDFA and APHIS websites.[35] [36]

Sanitation Measures to Minimize Pathogen Spread

Sanitation pruning should follow the International Society of Arboriculture (ISA) pruning guidelines and comply with industry standard published guidelines, such as *Best Management Practices – Tree Pruning* (Gilman and Lily 2019).[37] As a precaution against spreading the pathogen, tools and equipment should be cleaned and disinfected after use on confirmed or suspected infested trees or in known infested areas (e.g., tanoaks, coast live oaks, California bay laurel trees, and ornamental rhododendrons or camellias adjacent to open space areas). Pruning tools should be sanitized before pruning healthy trees or working in a pathogen-free area. Clean chippers and other vehicles of mud, dirt, leaves, and woody debris before leaving a SOD-infested site and before entering a site with susceptible hosts.

The following recommendations should be adhered to in order to minimize the spread of SOD:

Before Working:

- Inform tree/vegetation removal crews and contractors about the implications of SOD and sanitation practices when working in infested areas.

- Ensure crews have sanitations kits. Sanitation kits should contain the following: Chlorine bleach (10/90 mixture bleach to water), or Clorox Clean-up®, scrub-brush, metal scraper, boot brush and plastic gloves.

- Sanitize shoes, pruning gear, and other equipment before working in an area with susceptible species.

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34 Marin County, 2021. Agriculture, Weights and Measures Department (415-743-6700): https://www.marincounty.org/depts/ag/staff. Accessed on August 5, 2021.

35 California Department of Food and Agriculture, 2021. Statewide Sudden Oak Death Quarantine: http://www.cdfa.ca.gov. Accessed on August 5, 2021.

36 U.S. Department of Agriculture, 2021. Plant Protection and Quarantine Program: http://www.aphis.usda.gov. Accessed on August 5, 2021.

37 Sharon Lilly and Edward Gilman, 2019. *Best Management Practices - Tree Pruning*, 3rd Edition.

While Working:

- If SOD is present in a portion of a property or open space parcel, schedule all tree pruning/removal and other vegetation removal activities to occur first in the SOD-free area.

- When possible, work on SOD-infected and susceptible species during the dry season (July - October). Minimize all activities and operations in the spring. When working in wet conditions, keep equipment on paved or dry surfaces and avoid mud.

- Do not collect soil or plant material (wood, brush, leaves and litter) from host trees in the regulated area without first contacting the Marin County agricultural commissioner. Host material (e.g., wood, bark, brush, chips, and leaves) from tree removals or pruning of symptomatic or non-symptomatic plants should remain on site to minimize pathogen spread. Removing plant debris from the property is recommended only if it is the first infected tree detected in the area or if the fire risk is high.[38]

After Working:

- Use all reasonable methods to sanitize personal gear and crew equipment before leaving a SOD-infested site. Scrape, brush and/or hose off accumulated soil and mud from clothing, gloves, boots and shoes. Remove mud and plant debris by blowing it out or power washing chipper trucks, chippers, buckets trucks, fertilization and soil aeration equipment, cranes, and other vehicles.

- Restrict the movement of soil and leaf litter under and around infected trees as spores may be found there. Contaminated soil (particularly mud) on vehicle tires, workers boots, shovels, stump grinders, trenchers, etc., may result in pathogen spread if moved to a new, uninfested site. Remove or wash off soil and mud from these items before use at another site. If complete on-site sanitation is not possible, complete the work at a local power wash facility or an isolation area in the Town's equipment yard. Clean, orderly vehicles and equipment prevent pathogen and insect spread.

- Tools used in tree removal/pruning may become contaminated and should be disinfected with Lysol® spray, a 70 percent or greater solution of alcohol, or a Clorox® solution (e.g., one part Clorox® to nine parts water or Clorox Clean-up®). Remember that these products are corrosive to metal and fabric. Gear should be rinsed after sanitation.

Management of Bay Laurel Trees

Selective removal and pruning of non-riparian California bay laurel trees is a common strategy to protect oaks (and tanoaks) from SOD infection. Removal of accessible and small to medium sized (less than 20 inches diameter at breast height [DBH]) bay laurels within 15 to 30 feet of oaks should be performed during the late summer or fall. A higher assurance of containment can be

[38] University of California Statewide Integrated Pest Management Program, 2010. Op. cit.

accommodated by removal of bay trees within a greater distance (30 to 60 feet) from oaks. Bays are evergreen prolific crown-sprouters, and are difficult to remove permanently. Thus, herbicide application using the "hack and squirt" technique 1 month prior to removal is recommended for greater success. [39] This method involves using a small ax, machete, or hatchet to cut through the bark and into the sapwood. The cuts should create a "cup" to hold the herbicide solution and should ring the entire circumference of the tree. After 1 month, once the herbicide has been distributed throughout the tree, the tree should be cut. For trees that are less than 4 or 5 inches DBH, the tree should be severed and herbicide should be applied to the stump.

Phosphonate Application for High Value Oaks

For prized specimen or heritage oaks that offer significant habitat or aesthetic value, preventative treatment with phosphonates is recommended where risk of SOD is determined to be high. This treatment should be done in addition to removal of bay trees within the 30 to 60-foot radius surrounding the high value oak.[40] [41] Trunk injections once every 2 years or bark applications once a year (for trees less than 20 inches DBH) may increase disease resistance to these trees. Treatments are applied to healthy trees in areas with confirmed SOD in November or December. Adjacent landowners may also hire local arborists that are familiar with this technique to provide phosphonate applications to help protect their most important oak trees.

3.2 PRIORITIZATION OF MANAGEMENT ACTIVITIES

One of the primary goals of the OSRMP is to prioritize management recommendations to assist the Town in allocating funding and/or staffing resources on an annual basis. Section 3.9 of the OSRMP describes the prioritization categories and provides the rationale for the grouping of the recommended management activities under each priority level. The highest priority is Level 1, medium priorities are Levels 4 through 6, and the lowest priority is Level 9 as reflected in the OSRMP and Appendix A, *Treatment Areas and Treatment Recommendations*.

As part of this STIP, LSA reviewed the priority descriptions with the Town and consolidated them into **Table E** for easier reference. No major revisions are recommended. California Public Resources Code Sections 4290 and 4291 require that property owners with structures adjoining open space areas are obligated to:

- Manage vegetation within a minimum of 100 feet of a structure to maintain fire protection,
- Remove tree limbs within 10 feet of a chimney, and

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39 UC Berkeley Forest Pathology and Mycology Lab, 2021. SOD: Bay Laurel Removal: https://nature.berkeley.edu/garbelottowp/?p=1063. Accessed on August 5, 2021.

40 UC Berkeley Forest Pathology and Mycology Lab, 2021. SOD - Phosphonates: https://nature.berkeley.edu/matteolab/?tag=phosphonate. Accessed on August 5, 2021.

41 UC Berkeley Forest Pathology and Mycology Lab, 2016. Sudden Oak Disease Management PowerPoint Presentation: https://nature.berkeley.edu/garbelottowp/wp-content/uploads/PhosphonateApplicationv7-10_2016.pdf. Accessed on August 5, 2021.

- Maintain a roof free of litter and other vegetation.

California Public Resources Code Section 4291(a)(1)(A) (a)(B) specify that defensible space shall be maintained to the property line unless required by state law, local ordinance, rule, or regulation. Thus, based on the Town's current requirement that property owners clear 100-foot defensible space beyond habitable structures, minor revisions to Priorities 1 and 3 are recommended. As reflected in **Section 2.1**, clearance of vegetation on the open space lands shall only be conducted following the Town's authorization. These and other recommended minor revisions are highlighted in **Table E**.

Table E: Prioritization of Management Activities

Priority Level	Description
Priority 1 (*highest priority*)	• **Fire safety activities**, including removal of woody vegetation from public lands within 100 feet of residential homes, consistent with Tiburon and Southern Marin Fire Protection Districts~~, where owners have cleared their own lots~~ • **Other imminent public safety activities** (e.g., hazardous tree) • **Habitat restoration and protection of special-status species**, including removal of non-native species that pose an immediate threat to habitat of special-status species or serpentine habitat (e.g., Middle Ridge parcels and those near Ring Mountain)
Priority 2	• **Removal of non-native ~~woody~~ vegetation from grassland areas within Middle Ridge parcels**, including French broom (dominant non-native), pampas grass, ~~and artichoke thistle~~ bamboo, pine, and Harding grass o Prioritize most biologically valuable parcels (North Middle Ridge Management Area and Atkinson Parcel ~~and North Middle Ridge Management Area~~) o Prioritize monitoring the results of control efforts to prevent regrowth of non-natives in previously-treated areas o Tiburon jewelflower, which only grows on two main areas of the Middle Ridge, is threatened by native species, including wild oats; prioritize management of this species' habitat
Priority 3	• ~~**Fire safety activities**, including removal of non-native woody plant species from public lands within 100 feet of residential homes, consistent with Tiburon and Southern Marin Fire Protection Districts, where owners have not cleared their own lots~~ • **Fire safety and habitat restoration activities, including removal of non-native woody vegetation from grassland areas within other open space parcels not part of the Middle Ridge**, including French broom (dominant non-native)~~,~~ and pampas grass~~, and artichoke thistle~~
Priority 4	• **Install educational signage on the Middle Ridge** open space parcels, and replace any signs that have been removed (e.g., trail etiquette, maintaining dogs on leash) • **Monitor the effects of dogs on special-status species** and sensitive vegetation within the Middle Ridge • **Surveying for and mapping the location of special-status plants** on the Middle Ridge (prioritize high quality habitat areas)
Priorities 5 - 9	• **Removing selected stands of non-native invasive species and individual non-native woody plants that have colonized grassland areas where sensitive biological resources are presumed absent** • **Installing trail signs on parcels adjacent to Ring Mountain Open Space Preserve** o Level of priority depends on sensitivity of open space area and the benefit of the activity to fire safety and habitat protection or habitat restoration o Priority 5 activities entail investigating instances of residential owners planting lawns, hedges, and other types of ornamental vegetation on open space o Creating fuel breaks through dense French broom is Priority 7 in areas distant from homes o Prescribed burns in French broom stands is also Priority 7 because of experience gained by fire protection agencies in this type of vegetation
The priority for a particular management activity may be altered for a particular open space preserve based on changing vegetation over time or based on the interest of nearby residents and their acquire funding for a particular management activity. Nothing in the plan prevents residents from carrying out specific aspects of the plan on a separate priority, but coordination with the Town is necessary to prevent unforeseen impacts, such as to special-status species or sensitive communities, such as seasonal wetlands. Priorities of maintenance activities are based on various factors and not solely on public safety. Determining the priorities is based on the ability of the Town to complete a management activity that provides the greatest public benefit with a minimum of resources.	

Source: LSA 2010; Town of Tiburon 2021

4.0 PROPOSED NEAR-TERM MANAGEMENT ACTIVITIES

This section of the STIP describes the recommended near-term management activities that should be implemented by the Town over the next 5 years consistent with the 2010 OSRMP and based on current open space conditions, as well as concerns raised by Town staff and residents. Recommended activities are split into three categories: 1) annual fuel load and fire reduction activities, 2) site-specific vegetation management activities, and 3) special projects or programs that affect multiple open space parcels.

This section describes the methodology that was used to determine the recommended near-term management activities, and summarizes the suggested methods, frequency, seasonal timing, and estimated costs to assist the Town with scheduling and allocating the necessary resources in advance. A key component of the management of the Town's open space lands, consistent with the OSRMP, is the scheduling of follow-up vegetation monitoring and maintenance activities in order to document treatment success and adapt or modify management techniques as needed. Thus, follow up treatments and monitoring are built into the schedule of recommended management activities, and suggested monitoring and documentation protocols are also described.

Based on the timing of this STIP, which was initiated at the start of the Town's 2021/2022 fiscal year, the anticipated first full year of implementation will not occur until July 2022, the beginning of the Town's 2022/2023 fiscal year. Until that time, the Town should implement selected components of this STIP based on available resources.

4.1 METHODOLOGY

Appendix A of the OSRMP, *Treatment Areas and Treatment Recommendations*, provides a comprehensive list of management recommendations sorted by open space parcel, vegetation management goals, management priorities (1 is the highest priority and 9 is the lowest priority), and estimated costs. This has served as the primary resource for the Town in planning management activities. As such, it served as the starting point for the identification of recommended near-term management activities summarized in **Sections 4.2** through **4.4** below. Generally, the highest priority activities (i.e., priorities 1 through 4; see **Section 3.2**, **Table E**) were considered first for inclusion in this STIP. However, other management recommendations with lower priorities were also reviewed and incorporated into this STIP based on changes in existing conditions (e.g., increase in observations of invasive weed species on the open space lands since 2010) or increased Town or community concern (e.g., sudden oak death and the potential public safety or fire risks associated with dead trees). Conversely, some higher priority activities were not included in the proposed near-term work plans if the activities had previously been accomplished/implemented or the target species were not observed during LSA's May 2021 reconnaissance field survey.

While a comprehensive survey was not conducted of the open space lands as part of the preparation of this STIP, LSA's field observations, review of aerial imagery, and input provided others familiar with the open space lands (i.e., DPW staff and local botanist, Eva Buxton) were also considered. Additionally, management activities for parcels with higher resource value, recreational use, or potential public safety concerns were generally prioritized.

Consistent with the OSRMP, the priority, implementation schedule, or approach for a proposed near-term management activity in this STIP may be altered based on factors such as changing vegetation over time or observations of the effectiveness of implemented vegetation treatments. This approach could be described as "adaptive management," which is a common approach to natural resource management in the face of uncertainty. Adaptive management combines management and monitoring, with the goal of updating knowledge and improving decision-making over time. As such, the recommended near-term activities reflected in **Tables F** through **H**, as described below, do not necessarily represent a static list.

Through the implementation of the near-term work plans and diligent follow-up monitoring and maintenance, the Town will be able to evaluate the effectiveness of the annual management actions based on the monitoring results. Based on the lessons learned during the annual work plan implementation, the management actions for the following years may be adjusted and improved as needed (e.g., adjustment of tools and techniques). The Town may also need to deviate from the near-term work plan based on any reprioritization of projects, available resources, or other issues that arise. However, the proposed activities reflected in **Tables F** through **H** will serve as the primary guide for the implementation of the OSRMP over the next 5 years and were selected to allow the Town to make the biggest gains toward achieving the objectives of the OSRMP with more limited resources.

The proposed work plans allow for some flexibility based on available resources. For example, certain activities specify smaller work areas than initially proposed in the OSRMP. This allows the Town to focus on management activities for minimizing fire risk and emergency access, as well as activities near sensitive resources or habitats (e.g., special-status plants, serpentine grassland, mapped wetlands and drainages). With diligent follow-up monitoring and maintenance, as specified in the work plans, treatment areas may gradually be expanded over time as invasive plant populations get under control, a more manageable treatment effort is achieved, and more resources become available. Thus, many of the recommended management activities will continue beyond the 5-year implementation schedule and the implementation and monitoring cycle will be repeated. Additional activities may be incorporated over time as needs arise and based on available funding. In fact, implementation of this STIP should not preclude the Town from scheduling and implementing additional management activities, as reflected in the OSRMP or based on current circumstances.

Table F: Annual Fuel Load Reduction and Fire Management Activities

Vegetation Removal Activity / Objectives	Location	Invasive Species Targets	Approximate Area[1] (based on 2010 OSRMP Mapping)	Frequency	OSRMP Priority	Recommended Seasonal Timing and Proposed Methods				Estimated Cost[3]
						Summer (July - September)	Fall (October - December)	Winter (January - March)	Spring (April - June)	
Clear vegetation on open space lands within 100 feet of residential structures (*as needed based on annual inspections*) *- Reduce fire hazards and fuel loading*	Parcel 2, La Cresta Open Space Dedication	French Broom	0.05 acre	Annually, as needed	1		Hand Cut when soil is driest prior to wet season			$85
	Parcel 4, Hexan Subdivision Open Space Area	French Broom	0.17 acre	Annually, as needed	1		Hand Cut when soil is driest prior to wet season			$289
	Parcel 15, Atkinson Open Space Bond Purchase	Coyote Brush	0.12 acre	Annually, as needed	3[2]		Hand Cut (thin stands)			$58
	Parcel 21, Miraflores Subdivision Open Space Area and Pathway	French Broom Pampas Grass	0.85 acre	Annually, as needed	2, 3[2]	Hand Removal prior to seed dispersal in September (*Pampas Grass*)	Hand Cut (*French Broom*)			$2,890
	Parcel 24, Reed School District Open Space Bond Purchase Area	French Broom	0.15 acre	Annually, as needed	1		Hand Cut when soil is driest prior to wet season			$255
	Parcel 26, Del Madera Subdivision Dedicated Open Space Area	French Broom	0.16 acre	Annually, as needed	1		Hand Cut when soil is driest prior to wet season			$272
	Parcel 28, Eavey Bond Purchase Open Space Area	French Broom Pampas Grass	1.6 acres	Annually, as needed	1	Hand Removal prior to seed dispersal in September (*Pampas Grass*)	Hand Cut when soil is driest prior to wet season (*French Broom*)			$5,440
	Parcel 31, Hilarita Project Dedicated Open Space Area	French Broom	0.13 acre	Annually, as needed	3[2]		Hand Cut when soil is driest prior to wet season			$221
	Parcel 33, Reed Park Town-owned Open Space Lots	French Broom	0.57 acre	Annually, as needed	1		Hand Cut when soil is driest prior to wet season			$969
	Parcel 37, Marinero Circle Park	Italian Pine	0.39 acre	Annually, as needed	1		Thin understory; clear limbs less than 3 inches in diameter for 10 feet			$187
Clear vegetation up to 15 feet on either side of fire roads on open space lands (*as needed based on annual inspections*) *- Maintain access routes for emergency/maintenance vehicles and equipment* *- Reduce fire hazards and fuel loading*	Parcel 2, La Cresta Open Space Dedication	French Broom Non-native Grasses	2.82 acres (*4,100 feet x 30 feet = 123,000 sf*)	Annually, as needed	NA		Hand Cut when soil is driest prior to wet season (*French Broom*)		Mechanically Cut after rain has ceased (*Non-native Grasses*)	$5,809
	Parcel 15, Atkinson Open Space Bond Purchase	French Broom Pampas Grass Coyote Brush Non-native Grasses	2.86 acres (*4,150 feet x 30 feet = 124,500 sf*)	Annually, as needed	NA	Hand Removal prior to seed dispersal in September (*Pampas Grass*)	Hand Cut (*French Broom, Coyote Brush*)		Mechanically Cut after rain has ceased (*Non-native Grasses*)	$10,754
	Parcel 21, Miraflores Subdivision Open Space Area and Pathway	French Broom Non-native Grasses	0.48 acre (*700 feet x 30 feet = 21,000 sf*)	Annually, as needed	NA		Hand Cut when soil is driest prior to wet season (*French Broom*)		Mechanically Cut after rain has ceased; avoid base of serpentine outcrop (rare plant habitat) (*Non-native Grasses*)	$989
	Parcel 23, Del Madera Subdivision Homeowners Open Space Area	Non-native Grasses	0.76 acre (*1,100 feet x 30 feet = 33,000 sf*)	Annually, as needed	NA				Mechanically Cut after rain has ceased	$274
	Parcel 25, Hamon (Rock and Tree) Bond Purchase Open Space Area	French Broom Harding Grass Non-Native Grasses	0.62 acre (*875 feet x 30 feet = 27,000 sf*)	Annually, as needed	NA		Hand Cut when soil is driest prior to wet season (*French Broom*)		Mechanically Cut after rain has ceased; avoid base of serpentine outcrop (rare plant habitat) (*Non-native Grasses*)	$1,277
	Parcel 26, Del Madera Subdivision Dedicated Open Space Area	French Broom Non-native Grasses	0.15 acre (*225 feet x 30 feet = 6,750 sf*)	Annually, as needed	NA		Hand Cut when soil is driest prior to wet season (*French Broom*)		Mechanically Cut grasses after rain has ceased (*Non-native Grasses*)	$309
	Parcel 26, Del Madera Subdivision Dedicated Open Space Area - Gilmartin Drive (i.e., between Via Paraiso/Gilmartin intersection and 100 Gilmartin, and between 100 Gilmartin and 109 Gilmartin)	French Broom	1.22 acre (*1,775 feet x 30 feet = 53,250 sf*)	Annually, as needed	1		Hand Cut when soil is driest prior to wet season			$2,440

Notes
OSRMP: 2010 Town of Tiburon Open Space Resource Management Plan
NA: Not Applicable
[1] Represents maximum area (conservative estimate) that may need to be cleared based on annual inspections.
[2] This Short-Term Implementation Plan includes minor modifications to the OSRMP prioritization categories, including combining all vegetation clearing within 100 feet of residences under Priority 1 (see Section 3.2).
[3] Based on the status of the fire roads and open space areas within 100 feet of residential structures, more or less intensive vegetation clearing may be required on a year-to-year basis. Estimated total costs are based on the size of the treatment area and treatment estimates included in Table J.

Table G: Vegetation Management Activities (Years 1 through 5)

Location	Vegetation Removal Activity / Objectives	Invasive Species Targets	Approximate Area (based on 2010 OSRMP Mapping)	OSRMP Priority	Proposed Methods	Recommended Seasonal Timing and Estimated Cost[1] *Summer (July - September) / Fall (October - December) / Winter (January - March) / Spring (April - June)*				
						Year 1 (2022-2023)	**Year 2 (2023-2024)**	**Year 3 (2024-2025)**	**Year 4 (2025-2026)**	**Year 5 (2026-2027)**
Parcel 2, La Cresta Open Space Dedication	Remove French and Scotch broom from grassland area on either side of Ring Mountain Fire Road, focusing on isolated stand closest to the Ring Mountain Open Space Preserve gate (eastern parcel boundary) and working out to the west in subsequent years as infestation becomes more manageable and resources allow *- Protect native grassland and oak woodland habitat, reduce fuel loading* *- Support Marin County's efforts to reduce the extent of this species on neighboring Ring Mountain Open Space Preserve* *- Monitor recurrence of and remove French and Scotch broom in previous removal areas for minimum of 3 years*	French Broom Scotch Broom	1.5 acres (*initial work area; expand over time*)	3	Hand Pull prior to seed production using weed wrenches or similar tools Gradually expand work area west in follow-up years; continue to hand pull larger plants and seedlings in previous work area(s)	Spring (March-April) $18,000	Spring (March-April) $22,500	Spring (March-April) $27,000	Spring (March-April) $31,500	Spring (March-April) $31,500
Parcel 15, Atkinson Open Space Bond Purchase	Remove pampas grass (central portion of parcel and along fire road at Shepherd Way) *- Protect rare serpentine and aquatic habitat* *- Support Marin County's efforts to extirpate this species from Ring Mountain Open Space Preserve* *- Monitor recurrence of and remove pampas grass in previous removal areas for minimum of 3 years*	Pampas Grass	1.2 acres	1	Hand Removal/Dig after plumes appear and prior to seed production	Late Spring/Early Summer (June-August) $3,600	Late Spring/Early Summer (June-August) $1,800	Late Spring/Early Summer (June-August) $1,800	Late Spring/Early Summer (June-August) $1,800	
Parcel 15, Atkinson Open Space Bond Purchase	Remove isolated, small populations of French broom, Monterey pine, sweet fennel, and Italian thistle from the northern/eastern portion of the parcel (estimated 250 feet outside of fire road) *- Protect rare serpentine and aquatic habitat* *- Support Marin County's efforts to reduce the extent of these species on neighboring Ring Mountain Open Space Preserve* *- Monitor recurrence of and remove invasive plants in previous removal areas for minimum of 3 years*	French Broom Sweet Fennel Italian Thistle Monterey Pine	Isolated stands within approximately 15-acre area	3	French Broom: Hand Pull prior to seed production using weed wrenches or similar tools Others: Hand Cut/Dig prior to seed production	Spring (March-April) $22,500	Spring (March-April) $11,250	Spring (March-April) $11,250	Spring (March-April) $11,250	
Parcel 21, Miraflores Subdivision Subdivision Open Space Area and Pathway Parcel 24, Reed School District Open Space Bond Purchase Area Parcel 25, Hamon (Rock and Tree) Bond Purchase Open Space Area Parcel 26, Del Madera Subdivision Dedicated Open Space Area	Weed serpentine outcrops of wild oats and other non-native annual grasses *- Protect rare serpentine and special-status plant habitat (e.g., Tiburon jewelflower)* *- Monitor sensitive plant populations in previous removal areas and report results to the California Natural Diversity Database (CNDDB) for 2 years*	Wild Oats / Non-native Annual Grasses	1.9 acres	2	Hand Pull/thin non-native grasses supervised by qualified botanist taking care to avoid creating bare areas that could result in soil erosion (*timing dependent on rainfall; est. early Feb when Tiburon jewelflower is visible*) Qualified botanist conduct special-status plant surveys during blooming periods for 2 years following weeding	Winter (February-March) (*hand weeding activities*) $18,100[2]	Spring (April-June) (*monitoring and reporting*) $15,000[3]	Spring (April-June) (*monitoring and reporting*) $15,000[3]		

Table G: Vegetation Management Activities (Years 1 through 5)

Location	Vegetation Removal Activity / Objectives	Invasive Species Targets	Approximate Area (based on 2010 OSRMP Mapping)	OSRMP Priority	Proposed Methods	Recommended Seasonal Timing and Estimated Cost[1] *Summer (July - September) / Fall (October - December) / Winter (January - March) / Spring (April - June)*				
						Year 1 (2022-2023)	**Year 2 (2023-2024)**	**Year 3 (2024-2025)**	**Year 4 (2025-2026)**	**Year 5 (2026-2027)**
Parcel 21, Miraflores Subdivision Open Space Area and Pathway	Remove French broom along east edge near fire road and California bay; clear increasingly larger area toward interior of parcel in subsequent years as infestation becomes more manageable and resources allow *- Protect rare serpentine habitat (e.g., Tiburon jewelflower)* *- Monitor recurrence of and remove French broom in previous removal areas for minimum of 3 years*	French Broom	0.5 acre (*isolated stands as of May 2021*)	2	Hand Pull prior to seed production using weed wrenches or similar tools Gradually expand work area west in follow-up years; continue to hand pull larger plants and seedlings in previous work area(s)	Spring (March-April) $6,000	Spring (March-April) $7,500	Spring (March-April) $9,000	Spring (March-April) $10,500	Spring (March-April) $10,500
Parcel 21, Miraflores Subdivision Open Space Area and Pathway	Remove pampas grass and pride of Madeira from portion of parcel north of and along Avenida Miraflores and adjacent to the drainage in the southern portion of the parcel (closest to Parcel 25) *- Protect aquatic habitat and limit the spread of this species into other more sensitive open space areas* *- Monitor recurrence of and remove pampas grass and pride of Madeira in previous removal areas for minimum of 3 years*	Pampas Grass Pride of Madeira	0.5 acre	1, 5	Pampas Grass: Hand Removal/Dig after plumes appear and prior to seed production; may be timed to occur with pride of Madeira removal in spring but plants less conspicuous without plumes (*do not disturb the channel/bank of mapped aquatic features without any necessary authorization(s) from regulatory agencies*) Pride of Madeira: Hand Cut/Hand Dig prior to flowering; Hand Pull seedlings in follow-up years	Pampas Grass: Late Spring/Early Summer (June-August) Pride of Madeira: Winter/Early Spring (January-April) $3,000	Pampas Grass: Late Spring/Early Summer (June-August) Pride of Madeira: Winter/Early Spring (January-April) $1,500	Pampas Grass: Late Spring/Early Summer (June-August) Pride of Madeira: Winter/Early Spring (January-April) $1,500	Pampas Grass: Late Spring/Early Summer (June-August) Pride of Madeira: Winter/Early Spring (January-April) $1,500	
Parcel 23, Del Madera Subdivision Homeowners Open Space Area	Remove French broom and pampas grass from northern and eastern parcel boundaries *- Reduce fuel loading and protect rare serpentine habitat* *- Monitor recurrence of and remove French broom in previous removal areas for minimum of 3 years*	French Broom Pampas Grass	0.21 acre	2	Pampas Grass: Hand Removal/Dig after plumes appear and prior to seed production; may be timed to occur with French broom removal in spring but plants less conspicuous without plumes French Broom: Hand Pull prior to seed production using weed wrenches or similar tools	Pampas Grass: Late Spring/Early Summer (June-August) French Broom: Spring (March-April) $2,835	Pampas Grass: Late Spring/Early Summer (June-August) French Broom: Spring (March-April) $1,418	Pampas Grass: Late Spring/Early Summer (June-August) French Broom: Spring (March-April) $1,418	Pampas Grass: Late Spring/Early Summer (June-August) French Broom: Spring (March-April) $1,418	
Parcel 23, Del Madera Subdivision Homeowners Open Space Area	Remove pines from edge of parcel northeast of Hacienda Fire Road *- Protect rare serpentine habitat* *- Monitor recurrence of and remove pine saplings in previous removal areas for 2 years*	Monterey Pine	Isolated trees	1	Hand Cut/Hand Removal (*late summer/early fall after rare plants set seeds*)	Late Summer/Early Fall (September-October) $1,500	Late Summer/Early Fall (September-October) $375	Late Summer/Early Fall (September-October) $375		

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Table G: Vegetation Management Activities (Years 1 through 5)

Location	Vegetation Removal Activity / Objectives	Invasive Species Targets	Approximate Area (based on 2010 OSRMP Mapping)	OSRMP Priority	Proposed Methods	Recommended Seasonal Timing and Estimated Cost[1] *Summer (July - September) / Fall (October - December) / Winter (January - March) / Spring (April - June)*				
						Year 1 (2022-2023)	**Year 2 (2023-2024)**	**Year 3 (2024-2025)**	**Year 4 (2025-2026)**	**Year 5 (2026-2027)**
Parcel 23, Del Madera Subdivision Homeowners Open Space Area Parcel 24, Reed School District Open Space Bond Purchase Area	<u>Remove isolated stands of pride of Madeira</u> from within the open space lands closest to Gilmartin Drive (on either side of the Hacienda Fire Road) *- Protect rare serpentine and special-status plant habitat* *- Monitor recurrence of and remove pride of Madeira in previous removal areas for minimum of 3 years*	Pride of Madeira	Isolated stands as of May 2021	NA	Hand Cut/Hand Dig prior to flowering Hand Pull seedlings in follow-up years	Late Winter/Early Spring (February-April) $6,000	Late Winter/Early Spring (February-April) $3,000	Late Winter/Early Spring (February-April) $3,000	Late Winter/Early Spring (February-April) $3,000	
Parcel 24, Reed School District Open Space Bond Purchase Area	<u>Remove all pine saplings/seedlings</u> just below the top of the escarpment *- Protect rare serpentine and special-status plant habitat* *- Monitor recurrence of and remove pine saplings in previous removal areas for 2 years*	Monterey Pine	Isolated small trees/seedlings as of May 2021	1	Hand Cut/Hand Removal (*late summer/early fall after rare plants set seeds; larger plants may be pulled in the winter when soil is moist*)	Late Summer/Early Fall (September-October) $1,500	Late Summer/Early Fall (September-October) $375	Late Summer/Early Fall (September-October) $375		
Parcel 24, Reed School District Open Space Bond Purchase Area	<u>Survey for and remove isolated stands of French broom</u> throughout the grassland *- Protect rare serpentine and special-status plant habitat* *- Monitor recurrence of and remove French broom in previous removal areas for minimum of 3 years*	French Broom	0.34 acre (*isolated plants as of May 2021*)	2	Hand Pull using weed wrenches or similar tools (*late summer/early fall after rare plants set seeds; larger plants may be pulled in the winter when soil is moist*)	Late Summer/Early Fall (September-October) $4,080	Late Summer/Early Fall (September-October) $1,020	Late Summer/Early Fall (September-October) $1,020	Late Summer/Early Fall (September-October) $1,020	
Parcel 25, Hamon (Rock and Tree) Bond Purchase Open Space Area	<u>Remove French broom</u> in vicinity of serpentine outcrops and from interior portion of parcel; clear increasingly larger area toward interior of parcel in subsequent years as infestation becomes more manageable and resources allow *- Protect rare serpentine and special-status plant habitat* *- Monitor recurrence of and remove French broom in previous removal areas for minimum of 3 years*	French Broom	1 acre (*initial work area; expand over time*)	1, 5	<u>Above/Adjacent to Fire Road (near serpentine outcrop)</u>: Hand Pull (*late summer/early fall after rare plants set seeds; larger plants may be pulled in the winter when soil is moist*) <u>Below Fire Road</u>: Hand Cut (fall), follow-up Hand Pull (spring)	Late Summer/Early Fall (September-October) Spring (March-April) $11,500	Late Summer/Early Fall (September-October) Spring (March-April) $14,375	Late Summer/Early Fall (September-October) Spring (March-April) $5,750	Late Summer/Early Fall (September-October) Spring (March-April) $5,750	Late Summer/Early Fall (September-October) Spring (March-April) $2,875
Parcel 25, Hamon (Rock and Tree) Bond Purchase Open Space Area	<u>Remove all pine saplings/seedlings</u> below escarpment *- Protect rare serpentine and special-status plant habitat* *- Monitor recurrence of and remove pine saplings in previous removal areas for 2 years*	Monterey Pine	Isolated small trees/seedlings as of May 2021	2	Hand Cut/Hand Removal (*late summer/early fall after rare plants set seeds*)	Late Summer/Early Fall (September-October) $1,500	Late Summer/Early Fall (September-October) $375	Late Summer/Early Fall (September-October) $375		

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Table G: Vegetation Management Activities (Years 1 through 5)

Location	Vegetation Removal Activity / Objectives	Invasive Species Targets	Approximate Area (based on 2010 OSRMP Mapping)	OSRMP Priority	Proposed Methods	Recommended Seasonal Timing and Estimated Cost[1] *Summer (July - September) / Fall (October - December) / Winter (January - March) / Spring (April - June)*				
						Year 1 (2022-2023)	**Year 2 (2023-2024)**	**Year 3 (2024-2025)**	**Year 4 (2025-2026)**	**Year 5 (2026-2027)**
Parcel 25, Hamon (Rock and Tree) Bond Purchase Open Space Area	Remove pride of Madeira on slope below "Hippie Tree" *- Limit the spread of this species into other more sensitive open space areas* *- Monitor recurrence of and remove pride of Madeira in previous removal areas for minimum of 3 years*	Pride of Madeira	Isolated stands	5	Hand Cut/Hand Dig prior to flowering Hand Pull seedlings in follow-up years	Winter/Early Spring (January-April) $3,000	Winter/Early Spring (January-April) $1,500	Winter/Early Spring (January-April) $1,500	Winter/Early Spring (January-April) $1,500	
Parcel 26, Del Madera Subdivision Dedicated Open Space Area	Remove all pine saplings/seedlings from escarpment *- Protect rare serpentine and special-status plant habitat* *- Monitor recurrence of and remove pine saplings in previous removal areas for 2 years*	Monterey Pine	Isolated small trees/seedlings as of May 2021	1	Hand Cut/Hand Removal (*late summer/early fall after rare plants set seeds*)	Late Summer/Early Fall (September-October) $1,500	Late Summer/Early Fall (September-October) $375	Late Summer/Early Fall (September-October) $375		
Parcel 26, Del Madera Subdivision Dedicated Open Space Area	Remove individuals and small stands of French broom that are colonizing grassland below the fire road and gradually expand work toward Via Paraiso in subsequent years as infestation becomes more manageable and resources allow *- Protect rare serpentine and aquatic habitat and reduce fuel loading* *- Monitor recurrence of and remove French broom in previous removal areas for minimum of 3 years*	French Broom	1 acre (*initial work area; expand over time*)	2	Hand Pull prior to seed production using weed wrenches or similar tools Gradually expand work area toward Via Paraiso in follow-up years; continue to hand pull larger plants and seedlings in previous work area(s)	Spring (March-April) $12,000	Spring (March-April) $15,000	Spring (March-April) $6,000	Spring (March-April) $6,000	Spring (March-April) $3,000
Parcel 26, Del Madera Subdivision Dedicated Open Space Area	Remove all pride of Madeira from edge of parcel along Gilmartin Drive *- Protect rare serpentine and aquatic habitat and reduce fuel loading* *- Monitor recurrence of and remove pride of Madeira in previous removal areas for minimum of 3 years*	Pride of Madeira	0.2 acre (approximately 650 feet along Gilmartin Dr)	5	Hand Cut/Hand Dig prior to flowering Hand Pull seedlings in follow-up years	Winter/Early Spring (January-April) $600	Winter/Early Spring (January-April) $300	Winter/Early Spring (January-April) $300	Winter/Early Spring (January-April) $300	
Parcel 26, Del Madera Subdivision Dedicated Open Space Area	Hand cut bamboo, pampas grass, and bull thistle from serpentine wetlands east of fire road near Gilmartin Drive *- Protect rare serpentine wetland and special-status plant habitat* *- Monitor recurrence of and remove bamboo, pampas grass, and bull thistle in previous removal areas for minimum of 3 years*	Bamboo Pampas Grass Bull Thistle	0.12 acre	1, 3, 5	Hand Cut/Hand Removal (*do not disturb soil without any necessary authorization(s) from regulatory agencies*)	Spring (May-June) $360	Spring (May-June) $180	Spring (May-June) $180	Spring (May-June) $180	

Table G: Vegetation Management Activities (Years 1 through 5)

Location	Vegetation Removal Activity / Objectives	Invasive Species Targets	Approximate Area (based on 2010 OSRMP Mapping)	OSRMP Priority	Proposed Methods	Recommended Seasonal Timing and Estimated Cost[1] *Summer (July - September) / Fall (October - December) / Winter (January - March) / Spring (April - June)*				
						Year 1 (2022-2023)	**Year 2 (2023-2024)**	**Year 3 (2024-2025)**	**Year 4 (2025-2026)**	**Year 5 (2026-2027)**
Parcel 26, Del Madera Subdivision Dedicated Open Space Area	Remove all Pampas grass located outside wetlands and drainage below fire road; cut flower stalks of any plants within aquatic features in lieu of necessary authorization(s) from regulatory agencies *- Protect rare serpentine and aquatic habitat* *- Monitor recurrence of and remove pampas grass in previous removal areas for minimum of 3 years*	Pampas Grass	0.25 acre	1	Hand Removal/Dig after plumes appear and prior to seed production (*do not disturb the channel/bank of mapped aquatic features without any necessary authorization(s) from regulatory agencies*)	Late Spring/Early Summer (June - August) $750	Late Spring/Early Summer (June - August) $375	Late Spring/Early Summer (June - August) $375	Late Spring/Early Summer (June - August) $375	
Parcel 28, Eavey Bond Purchase Open Space Area	Initiate phased French broom removal starting at perimeter nearest homes on Via Paraiso (i.e., fuel breaks on more accessible west-facing slopes) and work inward in subsequent years as infestation becomes more manageable and resources allow *- Protect native grassland and oak woodland habitat, reduce fuel loading* *- Monitor recurrence of and remove French broom in previous removal areas for minimum of 3 years*	French Broom	1 acre (*initial work area; expand over time*)	7	Hand Cut in fall Hand Pull cut plants with green growth and seedlings in previous work area(s) in spring	Fall (September-October) Spring (March-April) $11,500	Fall (September-October) Spring (March-April) $14,375	Fall (September-October) Spring (March-April) $17,250	Fall (September-October) Spring (March-April) $20,125	Fall (September-October) Spring (March-April) $20,125

Notes
OSRMP: 2010 Town of Tiburon Open Space Resource Management Plan
NA: Not Applicable
[1] Estimated total costs based on the size of the treatment area and the estimated treatment costs included in Table J of this Short-Term Implementation Plan.
[2] Estimated cost based on two contractor weeders for 80 hours combined at $70/hour and one consulting botanist for 100 hours at $125/hour. Costs may be reduced by an estimated $5,600 if volunteers conduct weeding under supervision of botanist.
[3] Cost assumes consulting botanist will conduct monitoring surveys during special-status plant species blooming window, submit results to the California Natural Diversity Database (CNDDB) and prepare succinct report of findings with any follow-up management recommendations.

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Table H: Near-Term Special Projects (Years 1 through 5)

Management Project / Objectives	Location	OSRMP Priority	Recommended Timing and Estimated Cost				
			Year 1 (2022-2023)	Year 2 (2023-2024)	Year 3 (2024-2025)	Year 4 (2025-2026)	Year 5 (2026-2027)
Special-Status Plant Species Surveys and Mapping *- Identify known locations of special-status plant species within the open space lands* *- Manage and protect existing special-status plant populations and sensitive habitat based on updated mapping*	Parcel 2, La Cresta Open Space Dedication	4			$25,000[1] (*Field surveys and mapping*)		
	Parcel 3, Cibrian Subdivision Open Space Area	4					
	Parcel 15, Atkinson Open Space Bond Purchase	4					
	Parcel 21, Miraflores Subdivision Subdivision Open Space Area and Pathway	4					
	Parcel 23, Del Madera Subdivision Homeowners Open Space Area	4					
	Parcel 24, Reed School District Open Space Bond Purchase Area	4					
	Parcel 25, Hamon (Rock and Tree) Bond Purchase Open Space Area	4					
	Parcel 26, Del Madera Subdivision Dedicated Open Space Area	4					
	Parcel 37, Marinero Circle Park	6					
Comprehensive Vegetation Mapping Update *- Update 2010 OSRMP vegetation community mapping (Figures 2 through 12 of the OSRMP) based on current conditions* *- Identify and manage the extent of invasive plant species within the open space lands based on updated mapping*	All Parcels	NA					$20,000[2] (*Field surveys and mapping*)
Sudden Oak Death Baseline Inventory and Management Plan *- Conduct baseline SOD/canopy mortality survey and mapping effort* *- Develop a SOD Management Plan to assess risks, set priorities, and prescribe implementation strategies to minimize the spread of SOD and address potential public safety issues*	Parcel 2, La Cresta Open Space Dedication	9		$30,000 (*Baseline inventory and Management Plan*)	$25,000[3] (*Follow-up treatment and management*)	$25,000[3] (*Follow-up treatment and management*)	
	Parcel 3, Cibrian Subdivision Open Space Area	NA					
	Parcel 28, Eavey Bond Purchase Open Space Area	9					
	Parcel 29, Mt Tiburon Subdivision Dedicated Open Space Area	9					
	Parcel 30, El Marinero Subdivision Dedicated Open Space Area	9					
	Parcel 48, Stevens Court Open Space Dedication	9					
Maintenance Agreement(s) For Work in Aquatic Resources *- Determine the current extent of non-native invasive species within existing aquatic features and the anticipated ongoing treatment/maintenance activities required* *- Obtain long-term routine maintenance agreement(s) from regulatory agencies*	Parcel 21, Miraflores Subdivision Subdivision Open Space Area and Pathway	NA	$25,000 (*field survey, delineation, permit apps*)				
	Parcel 26, Del Madera Subdivision Dedicated Open Space Area	NA					
Replacement or Installation of Open Space Signage *- Conduct comprehensive assessment of condition/status of existing signs* *- Replace or reinstall existing signs and develop and install interpretive signage in key areas with sensitive biological resources to encourage appropriate visitor use and protection of sensitive habitat areas* *- Continue to monitor visitor use and effectiveness of signage; if needed, consider installing post and cable fencing along trails in sensitive areas to encourage visitors to remain on the trails*	Parcel 2, La Cresta Open Space Dedication	7	$7,000[4] (*replacement signs and new interpretive signage*)				
	Parcel 15, Atkinson Open Space Bond Purchase	7					
	Parcel 21, Miraflores Subdivision Subdivision Open Space Area and Pathway	4					
	Parcel 23, Del Madera Subdivision Homeowners Open Space Area	4					
	Parcel 24, Reed School District Open Space Bond Purchase Area	4					
	Parcel 25, Hamon (Rock and Tree) Bond Purchase Open Space Area	4					

Notes
OSRMP: 2010 Town of Tiburon Open Space Resource Management Plan
NA: Not Applicable
[1] Based on 100 hours of field surveys for two botanists at $130/hour, mapping, and summary memo.
[2] Based on 100 hours of field surveys for two biologists at $130/hour, aerial imagery review, and mapping.
[3] Assumes up to 2 acres of treatment area based on $12,300/acre for accessible areas (per Marin Municipal Water District's 2019 *Biodiversity, Fire, and Fuels Integrated Plan*) for first 2 years after SOD Management Plan Implementation; may be additional costs.
[4] Based on estimated cost of $200/replacement sign (materials and labor), assuming up to 5 signs replaced ($1,000 total); estimated $5,000 design cost for two interpretive signs and $1,000 materials and labor for install.

4.2 ANNUAL FUEL LOAD REDUCTION AND FIRE MANAGEMENT ACTIVITIES

The Town annually manages vegetation within the open space lands to reduce fire hazards, consistent with the OSRMP and State and local defensible space requirements. Fire safety activities, including removal of woody vegetation from public lands within 100 feet of residential homes, is considered a Priority 1 activity under the OSRMP (**Table E**). Additionally, while reducing fuel loads along fire roads within the open space lands (e.g., Parcels 2 and 15 and throughout the Middle Ridge Area) or adjacent roadways (e.g., Gilmartin Drive) isn't explicitly described as a management activity in the OSRMP, the Town, in coordination with the Tiburon FPD, conducts these activities annually for public safety to maintain emergency equipment and personnel access (**Photo 5**).

Photo 5: The Town annually clears fire roads within the open space lands to reduce fuel loading and maintain emergency equipment and personnel access.

Table F, Annual Fuel Load Reduction and Fire Management Activities, summarizes the recommended annual vegetation removal activities by location. Vegetation removal activities are grouped into two categories—vegetation clearing within 100 feet of residential structures and within approximately 10 to 15 feet along fire roads—based on the recommendations in the OSRMP and the Town's management practices over the last approximately 5 years (**Table B**).

As reflected in **Section 2.1**, the Town PWD and Tiburon FPD annually review fire road conditions and defensible spaces within the open space-urban interface areas. Based on the status of the fire roads and open space areas within 100 feet of residential structures, more or less intensive vegetation clearing may be required on a year-to-year basis compared to what is reflected in **Table F**.

4.3 VEGETATION MANAGEMENT ACTIVITIES (YEARS 1 THROUGH 5)

As reflected in **Section 1.2.2** of this STIP, the primary goals of the OSRMP are to reduce fire hazards on open space; reduce risk of wildlife; preserve native species, including special-status species and sensitive habitats; and control and reduce non-native species and weeds. The control of non-native species will largely accomplish these goals because they increase fire hazards and threaten special-status species and habitat. Thus, the majority of the recommended near-term management activities are associated with non-native vegetation management. **Table G** includes the proposed vegetation management projects in Years 1 through 5 sorted by location. Each vegetation activity is briefly described, and the associated objectives and invasive species targets are identified. The recommended removal methods and seasonal timing (i.e., spring, summer, fall, and winter) are also included. A key component of each vegetation removal activity is conducting follow-up monitoring

of previous treatment areas to check for recurrence and to conduct additional removal as needed. As such, a minimum 3 years of follow-up monitoring is typically specified.

The majority of the recommended vegetation management activities are proposed within the Middle Ridge open space areas (i.e., Parcels 21, 23, 24, 25, and 26), representing a continuation of the Town's efforts in this area. Notably, the proposed near-term vegetation management projects reflected in **Table G** include more emphasis on management of vegetation for resource protection, namely special-status plants (see **Section 4.3.1** below). In addition, the proposed Years 1 through 5 activities also take into consideration current ongoing vegetation management activities being conducted by Marin County on the adjacent Ring Mountain Open Space Preserve (i.e., for Parcels 2 [La Cresta] and 15 [Atkinson]) in an effort to help minimize the spread of invasive plants into sensitive habitats.

4.3.1 Serpentine Outcrop Weeding

Numerous rare plants occur in the Town's open space parcels. The Tiburon jewelflower is one of the rarest species, occurring only on the Tiburon Peninsula and nowhere else in the world. Maintaining the biological values represented by these special-status species and sensitive habitats is a primary issue addressed by the OSRMP, and their protection is designated as the highest priority (i.e., Priority 1 or 2), as reflected in **Table E**.

In 2018, a CEQA Initial Study/Negative Declaration (IS/ND)[1] was adopted by the Town for hand removal of wild oats and other non-native annual grasses within serpentine outcrop areas that provide suitable habitat for special-status plant species, including Tiburon jewelflower, Marin western flax, Tiburon paintbrush, and Tiburon buckwheat. This recommended vegetation management activity is included in **Table G** for Parcels 21, 24, 25, and 26 on the Middle Ridge. Consistent with the IS/ND, weeding activities should involve hand removing or thinning of existing weedy vegetation near special-status plants within the serpentine outcrop that spans these parcels. Weeding activities should be conducted to avoid soil disturbance that would result in erosion. The starting date will depend on the rainfall pattern of the particular year, but would typically begin in early February, when young Tiburon jewelflower plants are visible. Weeding should be supervised by a qualified biologist with expertise in identifying the target special-status plants during the various phases of plant phenology (seedling to senescence). As described in the IS/ND, the biologist should prepare a brief memorandum with the following information:

- A brief description of the work that was done and any observations;
- The dates that weeding was conducted;
- A map showing the area that was weeded;
- Photos taken before and after weeding; and

[1] Town of Tiburon. 2018. op. cit.

- The qualifications of the biologist overseeing the weeding and the field personnel conducting the weeding.

Following the weeding activities, sensitive plant population monitoring should be conducted annually for 2 years by the qualified biologist. The results of the monitoring should be submitted to the CNDDB.

4.4 NEAR-TERM SPECIAL PROJECTS (YEARS 1 THROUGH 5)

This section of the STIP describes recommended near-term special projects or programs that affect multiple open space parcels and/or require additional planning efforts prior to implementation. The recommended near-term special projects that should be implemented over the next 5 years include: 1) Special-Status Plant Species Surveys and Mapping, 2) Comprehensive Vegetation Mapping Update, 3) Sudden Oak Death Baseline Inventory and Management Plan, 4) Maintenance Agreements for Work in Aquatic Resources, and 5) Replacement or Installation of Open Space Signage. These projects are included in **Table H**. The Town may modify the recommended implementation timing reflected in **Table H** based on available resources and/or the need to reprioritize other management activities.

4.4.1 Special-Status Plant Species Surveys and Mapping

Some of the open space parcels provide habitat for and/or are known to support special-status species (**Photo 6**). While rare plant populations were mapped within the Middle Ridge Area in 2009 and limited informal follow-up surveys have been conducted since that time, comprehensive rare plant surveys throughout the Town's open space lands with potentially suitable habitat have not been conducted since the adoption of the OSRMP in 2010. As reflected in the OSRMP, special-status plant species would be better managed and protected if their occurrences are known and mapped. Surveys for special-status plant species were primarily designated as Priority 4 in OSRMP. The following parcels contain potential habitat for special-status plant species:

Photo 6: Marin western flax, a federally and State-listed species, observed adjacent to a fire road within the Middle Ridge on May 10, 2021.

- Parcel 2, La Cresta Open Space Dedication
- Parcel 3, Cibrian Subdivision Open Space Area
- Parcel 15, Atkinson Open Space Bond Purchase

- Parcel 21, Miraflores Subdivision Subdivision Open Space Area and Pathway
- Parcel 23, Del Madera Subdivision Homeowners Open Space Area
- Parcel 24, Reed School District Open Space Bond Purchase Area
- Parcel 25, Hamon (Rock and Tree) Bond Purchase Open Space Area
- Parcel 26, Del Madera Subdivision Dedicated Open Space Area
- Parcel 37, Marinero Circle Park (Marinero)

As reflected in **Table H**, a qualified botanist should survey potentially suitable rare plant habitat within these open space parcels during the appropriate blooming times for special-status plant species with the potential to occur (see **Section 3.1.1**). Surveys should be conducted consistent with current standard USFWS, California Department of Fish and Wildlife (CDFW), and CNPS protocols. The locations of special-status or otherwise rare plant species should be mapped, potentially in conjunction with a comprehensive vegetation mapping update (see **Section 4.4.2** below). Results should also be submitted to the CNDDB. Based on the results of the baseline special-status plant mapping, additional management and monitoring recommendations may be implemented in order to support the Town's goal of preserving native species, including special-status species and sensitive habitats, within the open space lands. The special-status plant species mapping should be updated every 5 to 10 years to understand the effect(s) of management actions on rare plant populations.

4.4.2 Comprehensive Vegetation Mapping Update

The 2010 OSRMP includes Geographic Information System (GIS)-based maps (OSRMP Figures 2 through 12) reflecting the vegetation types and sensitive habitats for each open space parcel based on a combination of aerial imagery review and field surveys conducted between February and April 2009. These figures provide the baseline conditions upon which the management actions in the OSRMP are based. The Town is currently using these vegetation community maps to identify and manage the extent of invasive plant species, potentially suitable habitat for special-status species, and areas where fuel load reduction should occur within 100 feet of residences.

A comprehensive vegetation mapping update should be conducted within the next 5 years to capture any changes in vegetation types, including the type/extent of invasive species and sensitive habitats (**Table H**). Wetlands and other waters should also be inventoried and mapped. Similar to the previous effort, a combination of field surveys with the use of a Global Positioning System (GPS) mapping device and a review of aerial imagery is recommended. The mapping should be updated every 5 to 10 years in order to properly prioritize and plan vegetation management projects addressing weed populations.

4.4.3 Sudden Oak Death Baseline Inventory and Management Plan

Further site-specific SOD research and sampling is necessary to determine the impacts of and responses to SOD in the open space lands. While complete eradication of SOD is not possible, the Town should immediately implement strategies to minimize the spread of the pathogen, as

recommended in **Section 3.1.3**, and manage for public safety hazards (e.g., falling trees or limbs and increased fuel loading).

The following recommendations should be implemented by the Town within the next 5 years to initiate the development of a long-term strategy for the identification of risks and management options related to SOD (**Table H**).

- Conduct a baseline SOD/canopy mortality-specific survey and mapping effort based on a combination of field observations and aerial (i.e., drone) imagery for open space lands with significant areas of oak woodland (e.g., parcels 2, 28, 29 and 30). SOD host species may also be identified.

- Consult with local Marin County SOD researcher Wolfgang Schweigkofler, Ph.D., who was interviewed by LSA during the preparation of this STIP. Dr. Schweigkofler offered to tour areas of concern with Town staff and provide additional management recommendations.[1]

- Enlist local volunteers to participate in UC Berkeley's annual SOD Blitzes[2], which typically occur over a weekend each spring (April/May), and collect leaf samples from the Town's open space lands for laboratory analysis. Results are added to UC Berkeley's SODMap[3] and will help determine the distribution of SOD in the Town's open space lands and support the development of site-specific recommendations.

Based on the baseline inventory reflected above, the Town should coordinate with a consulting specialist and the Tiburon FPD to develop a site-specific SOD Management Plan to assess risks, set priorities, and prescribe implementation strategies to minimize the spread of SOD and address potential public safety issues. Some parcels (e.g., Parcels 28, 29 and 30) with infestations may be deemed inaccessible due to lack of ingress/egress options or steep slopes. An SOD Management Plan will be integral in identifying alternative management options for these parcels based on existing constraints (e.g., creating fuel break buffers around infestation areas).

4.4.4 Maintenance Agreements for Work in Aquatic Resources

Some of the open space parcels support aquatic resources, including wetlands and drainages, which are potentially subject to regulation by the U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB), and/or CDFW. Soil disturbance associated with vegetation management activities in and adjacent to these resources may result in the need for regulatory permits consistent with the Clean Water Act and/or California Fish and Game Code. Many of the potentially jurisdictional aquatic features, as shown in Figures 2 through 12 of the OSRMP, are either

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1 Schweigkofler, Wolfgang, 2021. Research Associate Professor, Dominican University of California, San Rafael, California (*https://www.dominican.edu/directory/national-ornamental-research-site*). Personal Communication with LSA, July 14.

2 UC Berkeley Forest Pathology and Mycology Lab, 2021. SOD Blitz Project: https://nature.berkeley.edu/matteolab/?page_id=148. Accessed on August 5, 2021.

3 UC Berkeley Forest Pathology and Mycology Lab, 2021. SODMap Project: https://nature.berkeley.edu/matteolab/?page_id=755. Accessed on August 13, 2021.

located in inaccessible areas or areas that are not anticipated to be disturbed by recommended management activities. However, aquatic features within Parcels 21 (Miraflores Subdivision Open Space Area and Pathway) and 26 (Del Madera Subdivision Dedicated Open Space) within the more actively used and maintained Middle Ridge Area contain invasive species recommended for removal in the OSRMP, including pampas grass and bamboo. For vegetation maintenance and management activities that would result in the discharge materials into waters of the U.S. or State and/or change the bed, channel, or bank of any drainage, LSA recommends that the Town investigate obtaining federal and state programmatic permits (**Table H**). Programmatic permits would entail long-term routine maintenance agreements allowing the Town to establish and follow a consistent set of maintenance methods, BMPs, and impact avoidance approaches approved in advance by the regulatory agencies without the need for individual permits.

To implement this management action, LSA anticipates that a field survey will be required to determine the current extent of non-native invasive species within existing aquatic features and the anticipated ongoing treatment/maintenance activities that would be required. A jurisdictional waters delineation would be required for any aquatic features that will be regularly maintained by the Town. Based on a description of the anticipated long-term maintenance activities within these features and an assessment of potential effects and recommended avoidance and minimization measures, programmatic permit applications would be submitted to the regulatory agencies.

4.4.5 Replacement or Installation of Open Space Signage

For open space parcels with public access, the 2010 OSRMP recommends replacing signs that have been removed and installing new signs educating trail users about trail etiquette, sensitive biological resources, and maintaining dogs on leash and cleaning up after them. The OSRMP identified this management activity as Priority 4 for parcels located within the Middle Ridge Area due to the high recreational visitation and existing sensitive habitats. Since the adoption of the OSRMP, the Town amended the Municipal Code requiring permits for professional dog walkers, limiting the number of dogs per person (no more than six), and prohibiting dogs in biologically sensitive areas.

During LSA's field visit on May 10, 2021, a "stay on trail" sign that was presumably placed at the top of the escarpment near the boundary of Parcels 24 and 25 on the Middle Ridge was observed on the ground downslope of the existing ridge trail. A short-cut trail extends downslope in this area through habitat for State and federally-listed plant species, including the Tiburon jewelflower. Replacing or installing new instructional and interpretive signs will allow the Town to better manage the sensitive resources of the open space parcels, reduce conflicts between users, and help ensure that dog walking limitations are conveyed.

The OSRMP recommends instructional or interpretive signage for the following open space parcels with public use trails:

- Parcel 2, La Cresta Open Space Dedication
- Parcel 15, Atkinson Open Space Bond Purchase
- Parcel 21, Miraflores Subdivision Subdivision Open Space Area and Pathway
- Parcel 23, Del Madera Subdivision Homeowners Open Space Area

- Parcel 24, Reed School District Open Space Bond Purchase Area

However, signage may also be warranted within other areas with high public use (e.g., Parcel 25, Hamon [Rock and Tree] Bond Purchase Open Space Area).

As reflected in **Table H**, LSA recommends that the Town conduct a comprehensive review of the condition of existing signs, identify signs that need to be replaced or reinstalled, and develop and install interpretive signage in key areas with sensitive biological resources (e.g., Parcel 15 adjacent to the Ring Mountain Open Space Reserve and within Parcels 23, 24, 25, and/or 26 of the Middle Ridge Area). For example, interpretive signage should include a brief discussion of the biology and distribution of special-status plant species or sensitive habitats that occur in the Town's open space lands and the need to remain on existing authorized trails. Following the comprehensive review and replacement or installation of new open space signage, the status of existing signs should be reviewed annually by the Town. Based on continued monitoring of visitor use and behavior, the Town may consider the installation of low-impact fencing (e.g., post and cable) along trails in sensitive areas to encourage visitors and dogs to remain on the trails, consistent with the OSRMP.

Photo 7: Visitors walking above the serpentine outcrop within the Middle Ridge (Parcel 24, Reed School District Open Space Bond Purchase Area) on May 11, 2021. This area provides habitat for listed plant species, some of which are known to only occur on the Tiburon Peninsula.

4.5 MONITORING, DOCUMENTATION, AND DATA MANAGEMENT

Monitoring, documentation (data collection and mapping), and data management are essential aspects of an effective vegetation management program. As reflected in the OSRMP, annual monitoring and evaluation should be conducted to determine the adequacy of the treatment techniques and management approach. Long-term commitment of at least 3 years is typically necessary to ensure treatment success. Follow-up treatments are usually necessary to prevent re-infestation or the occurrence of additional invasive species.

Monitoring and documentation will help the Town understand the condition of resources and the effectiveness of control treatments on target invasive plant populations, allowing staff to make informed management decisions. While the Town may not have the staffing or resources to maintain a GIS database with invasive plant locations and associated data, consistent monitoring and recordkeeping is essential. **Table I** includes recommended data that should be recorded for each vegetation treatment activity, including follow-up visits. The Town should require this information

be recorded as a condition of all vegetation removal agreements with outside contractors or consultants. The Town may also consider establishing fixed photomonitoring locations in select treatment areas to document control success over time.

LSA recommends that a comprehensive monitoring and data management program be developed in conjunction with the next major OSRMP update. The program should take into account available Town resources, technology, and staff capabilities. The program should include the development of monitoring procedures and success criteria.

Table I: Vegetation Treatment Data Collection

General Reporting Information
Open Space Parcel Name and Specific Location (with geographic coordinates, as needed)
Recorder's Name
Record Date
Invasive Plant Population Characteristics
Plant Species Name
Infestation Area Size
Percent Cover (e.g., 0-25%, 25-50%, 50-75%, and 75-100%) and/or Number
Life Stage (seedling, adult, flowering, seed dispersal)
Treatment Information
Date(s) of Treatment
Treatment Area Size
Treatment Method (including tools/equipment used, notes on effectiveness or improvement, etc.)
Labor Type, Number, and Hours/Days Worked
Cost Per Hour/Day and Total Cost
Volume of Material Removed (number of plants, disposal bags, or truck loads)
Supplemental Information / Attachments
Photograph(s) of the invasive plant infestation (e.g., before and after photos from fixed locations)
Mark-up map showing work area

4.6 COST SUMMARY

Table J provides a summary of estimated treatment costs based on the Town's experience and that of other land managers, including the Marin Municipal Water District and Marin County Parks. The actual costs for treatment methods will vary according to:

- Height, density, species composition, and arrangement (e.g., dense or sparse) of existing vegetation;
- Desired vegetation conversion and management objective (e.g., reduction of fuel loading versus minimization of non-native invasive species to protect sensitive habitat);
- Size, accessibility, slope, soil stability, and vegetation types;
- Weather or seasonal timing;

- Regulations and resource restrictions (e.g., work within regulated jurisdictional aquatic features); and
- Monitoring and implementation of follow-up treatment prescriptions.

As recommended by the OSRMP, the estimated vegetation management costs reflected in **Table G** incorporate necessary follow-up activities (i.e., monitoring of previous treatment areas and follow-up treatments, as needed) for a minimum of 2 to 3 years following the initial treatment. The costs for follow-up activities are estimated at between 25 and 50 percent of the initial estimate, with greater cost reductions occurring over time as invasive plant populations are reduced. Some vegetation management activities, as noted in **Table G,** reflect an assumption that work will be phased in gradually as resources allow (e.g., treatment of large areas of French broom).

Table J: Estimated Vegetation Treatment Costs

Treatment Method	Estimated Cost (per acre)[1]
Hand Labor Treatments	
French Broom Hand Removal/Pull	$12,000[2]
New Fuel Break Construction/Hand Cut French Broom	$10,000
Weed Hand Removal (Cut/Dig/Pull) (dense)	$3,000
Weed Hand Removal (Cut/Dig/Pull) (sparse)	$1,500
Tree/Shrub Thinning	$480
Mowing	
Roadside Mowing/Clearing (e.g., Gilmartin Drive)	$2,000
Retreat Fuels in Existing Fuel Breaks/100-Foot Clearance Areas	$1,700
Mowing Fine Fuels/Grasses	$360

[1] Estimated treatment costs adapted from the Marin Municipal Water District's 2019 *Biodiversity, Fire, and Fuels Integrated Plan* unless otherwise noted.
[2] Hand removal of French broom based on estimate provided by Marin County Parks staff via email communication with Town Department of Public Works staff on February 5, 2021

Table K provides a summary of the estimated annual and total costs for implementing the recommended management activities included in this STIP. The estimated costs are based on the assumption that the Town will continue to hire independent contractors to implement the majority of recommended management activities. The acreages treated, as reflected in **Tables F** through **H,** and associated costs identified in **Tables J** and **K** are preliminary and may be updated yearly, depending on the work that is completed and the available funding. In particular, consistent monitoring and documentation of vegetation treatments, as recommended in **Section 4.5**, will allow the Town to more accurately determine costs and budget for future activities.

Other recommended management actions from the OSRMP that are not addressed in this STIP are not included in the estimate of costs. The Town should continue to incorporate additional management activities annually, in order to fully implement the OSRMP, as treatment areas become more manageable, priorities shift, and Town resources allow. The Town may also consider pursuing grant funding opportunities (e.g., from the California Department of Forestry and Fire Protection

[Cal Fire] or the California Coastal Conservancy Wildfire Resilience Program) to help offset OSRMP and/or STIP implementation costs.

Table K: Estimated Short-Term Implementation Plan Costs

Management Action[1]	Total Estimated Cost					Total[2]
	Year 1 (2022-2023)	Year 2 (2023-2024)	Year 3 (2024-2025)	Year 4 (2025-2026)	Year 5 (2026-2027)	
Annual Fuel Load Reduction and Fire Management Activities	$32,517	$32,517	$32,517	$32,517	$32,517	$162,586
Vegetation Management Activities	$111,725	$97,593	$88,843	$96,218	$68,000	$462,378
Near-Term Special Projects	$32,000	$30,000	$50,000	$25,000	$20,000	$157,000
Total	$176,242	$160,110	$171,360	$153,735	$120,517	**$781,964**

[1] This table does not reflect other recommended management actions from the 2010 Open Space Resource Management Plan that are not addressed in this Short-Term Implementation Plan. Other activities from the OSRMP should be incorporated annually as management priorities shift and Town resources allow.
[2] Total costs do not include Town administrative/staff costs or equipment costs.

5.0 REFERENCES

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APPENDIX A

OPEN SPACE VEGETATION MANAGEMENT GUIDELINES FOR HOMEOWNERS

GUIDELINES FOR MOWING GRASS AND VEGETATION CLEARING ON TOWN OF TIBURON OPEN SPACE LAND ADJACENT TO YOUR HOME

Throughout the year, the Town of Tiburon performs a variety of tasks to reduce the possibility of fire on open space land. Fire road clearing, debris removal and removal of non-native/invasive weeds are just a few examples of what the Town does to keep our open space areas safe from fires. Additionally, the California Department of Forestry (Cal Fire), the state's fire agency, requires property owners do their part to create a low fuel defensible space zone of 100 feet from habitable structures on their property or to their property line.

In an effort to help property owners meet this requirement the Town of Tiburon allows the cutting of grass and similar vegetation on adjacent Town owned open space land that is located within 100 feet of any residential structure. Property owners must obtain an Encroachment Permit (no fee) to mow grass or remove woody vegetation (heavy brush or trees) in creating defensible space for your property. Please call the Public Works office at 415-435-7354 to discuss the permit application process.

To perform this work safely and responsibly the Town asks you to please follow these strict guidelines

- Confirm the property you want to mow is owned by the Town of Tiburon and not your neighbor or another agency. Information on lot lines and property ownership is available at the Marin County Assessor-Recorder's office at 415-499-7215 or at http://www.co.marin.ca.us/depts/AR/main/index.cfm.

- Obtain an Encroachment Permit (no fee) from the Public Works Dept. Call 415-435-7354 for information and details on pulling a permit.

- Never mow under high fire hazard or RED FLAG conditions. Call 415-499-7191 for current conditions. In the heat of summer mow early in the morning or during the evening when temperatures are cooler and there is less risk of starting a fire. Use extra caution with power mowers or other spark producing machines.

- Have a 5 pound "ABC" fire extinguisher on hand, as well as, a fully charged garden hose at the work site during mowing operations.

- Do not use metal mowing heads on weed whips as they can spark from contact with rocks. Use only plastic string. Make sure spark arrestors are in place and functioning properly.

- Do not lay hot power tools in dry grass where hot metal may ignite flammable vegetation. Refuel tools away from vegetation on paved surfaces or cleared areas. Store gasoline away from the work site in a sealed container.

- If possible have someone keep a close watch while you are working and perhaps have a cell phone with them.

- Watch for hikers and wildlife. Discontinue work until they are clear from the area.

- Prior to doing any work in open space, residents must notify and obtain permission from the Tiburon Public Works Department at 435-7354 and the appropriate Fire District, which could either be the Tiburon Fire Protection District at 415-435-7200 or the Southern Marin Fire District at 415-388-8182 depending on where you live, obtain equipment training through the Department of Public Works and sign a Waiver releasing the Town of any liability.

- For information about Tiburon's Open Space please visit the Town's website at www.townoftiburon.org and for fire protection guidelines contact your fire protection agency or visit www.firesafemarin.org.

Thank you for your cooperation!

General Release and Waiver for Volunteers For The Town Of Tiburon

Thank you for volunteering to help the Town; in this time of limited public resources, your time and energy is especially appreciated. Unfortunately, we live in an age of litigation. Therefore, before you can work on Town property, our lawyers require us to require you to read the following information and then sign the Release and Waiver on the other side of this page. The Release and Waiver imposes obligations on you and limits your legal rights, so you must understand it fully before you sign. If you should have any questions, please ask us before you sign.

You have been provided with a Landscape Volunteer Training Form that discusses safety considerations in more detail. Please read this Training Form carefully.

Safety -- In order to work Town property, we may be using equipment, such as gardening tools (including, without limitation, hand shears, shovels, loppers and small hand saws), litter-grabbers, plastic bags, latex gloves, ladders and other equipment. Mishandling or misusing these items could cause you injury, and it is possible that you may have an allergy to latex which could cause a severe reaction. You may also be working in areas where vehicles are moving, and you will likely be leaning over, pulling, walking on uneven terrain, moving rocks, etc. We are not aware of any dangerous conditions on Town open space, but ultimate responsibility for safety is yours.

Personal Injury – You are participating in this project as a Town volunteer. If you suffer physical injury during this project, your remedy will be limited to those required under California's Workers Compensation regulations. **You will not be entitled to sue the Town for your injury.**

You also agree to release the Town of Tiburon and all its employees and officers, and you waive all claims against them for personal injury (including death) incurred as a result of the negligence of any employee, agent or servant of the Town of Tiburon during your involvement with this project.

Property Damage –The environment in which we will work may damage your personal property, especially your clothing, or any real property that you may own in the area. If your property is damaged, you agree to hold the Town harmless. This means you will not file any claims against the Town for any personal or real property damage related to your volunteer work on this project even if the damage is caused by the negligence of a Town employee. We strongly urge you to use common sense and care.

Injury to Third Persons and Their Property -- In addition to your own safety and that of other volunteers, we want you to take every step possible to protect the safety of other residents and visitors to our Town. You must take every reasonable precaution to prevent injury to others and to prevent damage to their property.

Please continue reading and sign your name on the other side

- -

General Release and Waiver

I have read the information sheet and the above background to the Volunteer's Release and Waiver and each paragraph contained therein. I have also read the Landscape Volunteer Training Form provided in connection with my work on Town property. I understand all the provisions in the Release and Waiver and the Training Form. I further understand that accidents and injuries can arise out of the event. Knowing the risks, nevertheless, I hereby agree to assume those risks and to release and to hold harmless all of the persons or agencies mentioned below who, through negligence or carelessness, might otherwise be liable to me or my heirs or assigns for damages, except to the extent that remedies may be available through the Town's Workers' Compensation plan.

I hereby release the Town of Tiburon and all its employees and officers and waive all claims against them for property damage, including such damage incurred as a result of the negligence of any employee, agent, volunteer, or servant of the Town of Tiburon. It is further understood and agreed that this waiver, release and assumption of risk is to be binding on my heirs and assigns. With respect to this waiver for property damage, I hereby waive the rights created by California Civil Code Section 1542. I certify that I have read the following provisions of California Civil Code Section 1542:

"A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him must have materially affected his settlement with the debtor."

I understand this provision and so indicate by placing my initials here: ___

I understand and acknowledge that the significance and consequence of this waiver of California Civil Code Section 1542 is that even if I should eventually suffer additional property damages arising out of my participation as a volunteer for the Town, I will be unable to make any claim for those damages. Furthermore, I acknowledge that I intend this waiver to extend even to claims for damages that may exist as of the date of this release but which I do not know exist, and which, if known, would materially affect my decision to execute this release, regardless of whether lack of knowledge is the result of ignorance, oversight, error, negligence, or cause.

Date______________________

____

Signature of Volunteer (If you are under 18, you must also have a parent or guardian sign below.)

____

Print Name

____ _____________________

Street Address Daytime phone number

____

Signature of Parent or Guardian

Town of Tiburon
Open Space Rules and Regulations
Effective 10-17-2014

A. Purpose and Authority

This document establishes rules and regulations for the use of open space areas under the jurisdiction of the Town of Tiburon. Said open spaces are depicted on **Figure 1** attached hereto. No person or group of persons shall use any open space area or facility for any purposes inconsistent with these Rules and Regulations, except with prior written permission from the Town Manager. These rules and regulations are adopted and enforced pursuant to Title V, Chapter 18 of the Tiburon Municipal Code.

B. Definition of Open Space

Open space area is defined as any area of land or water owned and/or controlled by the Town of Tiburon for open space purposes that is predominantly unimproved, including but not limited to open slopes, drainageways, watershed and shoreline areas, woodlands, ridges, hilltops, hillsides, gullies, ravines, and any paths, trails, or unpaved roads within such area. Such areas are generally designated as Open Space of the Town's Zoning Map.

C. Use of Open Space in General

Unless otherwise posted, open space lands shall generally be open to the public for their use and enjoyment in accordance with these Rules and Regulations. The Town will permit public or private recreational activities in open space areas so designated for those types of uses. The Town will also permit recreational use such as hiking, horseback-riding, bicycle-riding, nature study, scientific study, photography, painting, sketching, picnicking, kite flying and other day use recreational activities compatible with this document.

D. Specific Rules & Regulations

1. **Hours of Use:** No person shall be allowed to enter, loiter or remain in or on any Town open space area at any time one hour after sunset to one hour before sunrise. Authorized personnel and emergency service personnel are exempt.

2. **Closing of Areas:** The Town shall reserve the right to close certain open space areas to the public for the purpose of protecting the environmental quality of the area, during periods of extreme fire hazard or other such conditions deemed hazardous or dangerous to persons or property, or for other valid cause.

3. **Prohibited areas:** The Public Works Department may from time to time declare and post a prohibited area for such reasons as unsafe or dangerous conditions, maintenance or construction of improvements, restoration, or other valid purposes.

4. **Utilities:**

a. Representatives of public utilities and/or public agencies shall give prior notice to the Town Manager before entering an open space area for the purpose of utility maintenance, repairs or installations except in emergency situations.
b. No unauthorized person shall enter a fenced utility area or remove, destroy or tamper with any valve switch or control, any telephone, electrical, water or sewer line or system owned or operated by a public utility or public agency in any open space area.

5. **Grazing:** Grazing by domestic animals shall not be permitted in open space areas, except as may be allowed for fire prevention purposes with written Town authorization.

6. **Destruction of Property:** No person shall damage or destroy any property, whether natural or man-made, in any open space area, including trees, plants, rocks, soil, trails, fences, and signs.

7. **Archaeological Features:** No person shall move, remove, damage, or destroy an object of archaeological or historical interest or value in any open space area.

8. **Fires:** No person shall start a fire for any purpose within any open space area unless prior written permission has been obtained from the Town Manager and the Fire Protection District in which the open space is located.

9. **Smoking:** No person shall smoke in open space areas. Smoking in open spaces is also prohibited by Chapter 28 of the Tiburon Municipal Code.

10. **Trash and Litter:** No person shall deposit any trash or litter in any open space area. Waste or trash from incidental day use must be carried out of the open space area or placed in Town-supplied trash receptacles on the open space where available.

11. **Sewage or Waste Water:** No person shall deposit waste water, gray water, sewage or effluent from any source within an open space area.

12. **Swimming or Bathing:** No person shall swim, bathe, or wade in any seep, spring, pond, lake, marsh, or watercourse in an open space area.

13. **Water Quality:** No person shall introduce to waters in an open space area substances that would alter or degrade the natural water quality.

14. **Wildlife:** No person shall purposely harm or frighten any fauna in any open space area, provided that law enforcement officials or agencies directed by the Town may trap, hunt or kill fauna when deemed necessary.

15. **Hunting and Dangerous Weapons:** Hunting is prohibited in open space areas. No person except duly qualified and directed law enforcement officials shall take into any open space area any firearm, air gun or gas weapon, sling shot, crossbow, bow and arrows or other articles of like character.

16. **Fishing:** No person shall take fish within any open space area unless posted for fishing purposes. No person shall utilize a spear or arrow while fishing.

17. **Release of Animals:** No person or persons shall release, introduce or abandon any animal of any type into an open space area.

18. **Planting & Plant Removal:** Introduction or establishment of plants or vegetation in open areas by any person is prohibited. Vegetation removal in any open space area is prohibited without prior written permission of the Town Manager or Director of Public Works. Grass mowing for fire prevention purposes is allowed with the securing of a no-fee Encroachment Permit from the Tiburon Public Works Department.

19. **Dogs:** Any dog within an open space area shall at all times be kept under the immediate control and direction of a responsible person. Any dog that is not subject to such control and direction may be seized and impounded. If any dog defecates within an open space, the person or persons accompanying the dog are responsible for the immediate removal and disposal of the feces in a sanitary manner. No more than three (3) dogs at a time may be walked by any individual in any open space area without prior issuance of a Dog-Walking Permit from the Tiburon Public Works Department.

20. **Horses & Hitching:** No person shall ride, lead, or keep a horse on open space property except on such unpaved roads and trails or other areas specifically designated for such use. No horse shall be hitched or tied to any tree, shrub or structure in any manner that might endanger the horse or any person, and no person shall allow a horse to be left unattended or insecurely tied.

21. **Vehicles and Motor-driven Devices:**

a. No person shall operate a motor vehicle on, over, or across any open space area. This shall not apply to an emergency vehicle, a maintenance vehicle

operated by an employee of the Town's Public Works Department, a maintenance vehicle operated by a utility agency with access rights over the open space, or by a vehicle authorized by the Town Manager.

b. No person shall operate any motorcycle, all-terrain vehicle, or other motor-driven cycle, device, or vehicle in any open space area, except as set forth in subsection (a) above.

22. **Bicycle Riding:** Bicycle riding is limited to graded fire roads and to established and maintained trails. No cross-country bicycle riding and no bicycle riding on other areas within open space is permitted. The Town may close established trails to bicycle riding at any time in order to prevent erosion.

23. **Vandalism:** The Town will seek full recompense, as well as any applicable civil, administrative and/or criminal penalties, for damage or vandalism to open space areas.

24. **Miscellaneous Dangerous Activities:** No person or persons shall engage in any of the following activities on open space lands:

a. Use or possess fireworks of any kind
b. Drive, chip or in any manner play or practice golf or hit golf balls
c. Operate self-propelled model airplanes, boats, automobiles or other model craft of any kind or description
d. Throw, release or discharge missiles, rockets or similar projectiles
e. Hang glide, parasail or parachute
f. Engage in any activity or operate any device recklessly or negligently so as to endanger the life, limb or property of any person

25. **Handbills or Circulars:** No person shall distribute or post any handbills or circulars on any open space area, or advertise any program or event not specifically authorized in writing by the Town Manager.

26. **Vendors:** No vendor shall operate within any open space area.

E. Violations and Enforcement.

Violations of these rules constitutes a violation of Title V, Chapter 18 of the Municipal Code and is subject to all penalties and enforcement mechanisms set forth in the Tiburon Municipal Code or under other applicable law. The Tiburon Police Department shall be primarily responsible for the enforcement of these rules and regulations.