

MEDITERRA
Preserve Management Plan

SFWMD Permit No. 11-01761-P
USACOE Permit No. 199900076 (IP-SB)

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Prepared for:

Mediterra Community Development Districts

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- Attachment 3 Mediterra Preserve Management and Fuel Reduction Map
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- Attachment 5 Management Activity Guidelines
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1.0 INTRODUCTION

1.1 Background

The Mediterra residential community received approval of ERP Permit Number 11-01761-P from the South Florida Water Management District (SFWMD) on November 10, 1999. Approval from the US Army Corps of Engineers (USACE) was received through DA Permit Number 199900076(PI-SB) in January 2000. Copies of these permits are provided in **Attachment 1**. The project encompasses approximately 1,445 acres in Sections 1,2,11, and 12 of Township 48 South, Range 25 East in Lee and Collier Counties, Florida. A project location map is provided as **Figure 1**. Mediterra is comprised of single family residential homes, two golf courses, and twenty-one (21) natural preserve areas. The preserves are afforded protection by Deeds of Conservation Easement (Conservation Easements) to the SFWMD, which were required as compensation for wetland impacts resulting from the initial construction of the community. A copy of each recorded conservation easement is provided in **Attachment 2**. The Mediterra North Community Development District (CDD) (Lee County) and Mediterra South CDD (Collier County) are tasked with overseeing the management of the preserves and compliance with permit special conditions.

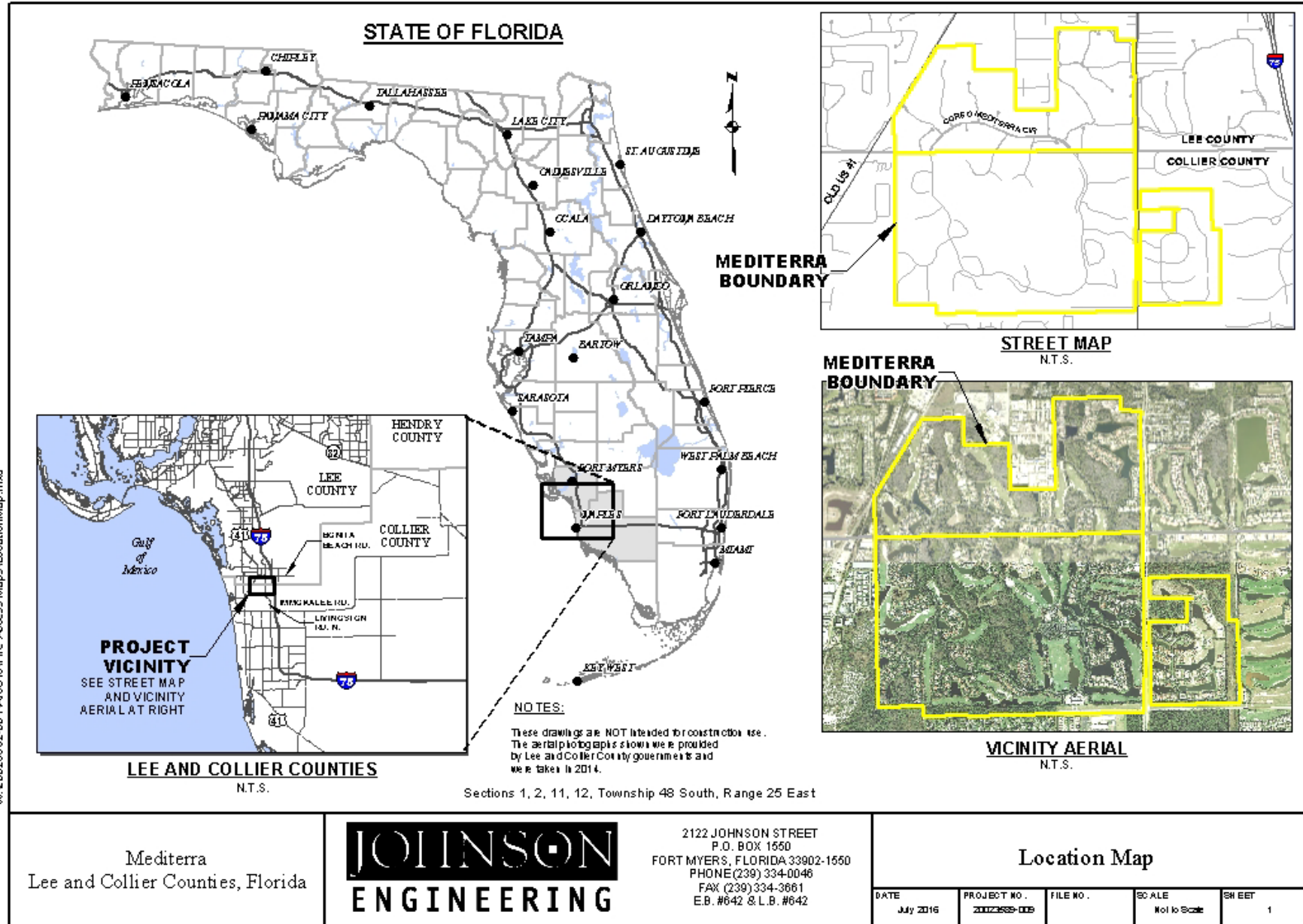
As was standard at the time of SFWMD permit issuance, management activities in the approved maintenance plan focused on wetland restoration and included invasive vegetation removal and hydrologic enhancement. Prescribed burning and beneficial maintenance of native vegetation were not required and are, in part, restricted by the conservation easements, which prohibit the removal or destruction of trees, shrubs, or other vegetation, that was not in accordance with a SFWMD approved maintenance plan. Nearly two decades later, the preserves at Mediterra have transitioned from an open mid-canopy over a diverse understory, toward a closed mid-canopy and reduced diversity and coverage of beneficial groundcover. For communities permitted now, regulations governing the creation and maintenance of preserves have changed, and the environmental benefits of prescribed burning and maintenance of native vegetation are now commonly considered and required as part of preserve management plans. Additionally, many of these activities are now required to be considered as part of Wildfire Hazard Mitigation Plans during local permitting approval (City of Bonita Springs Ordinance No. 15-28 §3-417e). Mediterra is looking to create a preserve management plan to reflect the known benefits of these types of land management activities.

1.2 Goals

The existing Deeds of Conservation Easement do not currently allow for fuel reduction, or beneficial maintenance of native vegetation due to the following exclusions stated in the easements:

- 2c) Removal or destruction of trees, shrubs, or other vegetation, except for the removal of exotic or nuisance vegetation in accordance with a SFWMD approved maintenance plan;
- 2d) Excavation, dredging, or removal of loam, peat, gravel, soil, rock, or other material substance in such a manner as to affect the surface.

Figure 1: Project Location Map



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Under Section 3, the easements do allow for passive recreational uses upon written approval by the SFWMD. Based on the Section 3 allowance, the caveat in Section 2c regarding a “SFWMD approved maintenance plan,” this Preserve Management Plan is being developed for submittal to SFWMD to incorporate additional land management activities.

This Preserve Management Plan is designed to take a proactive approach to maintaining the health and diversity of preserve areas within the Mediterra community while simultaneously reducing and preventing risks to the community resulting from a wildfire occurring within those preserves.

This management plan, once approved by the reviewing agencies, will set forth allowable preserve management activities, but is not meant to replace the special conditions of the permits and conservation easement. Rather, it serves as a tool to aid the operating entities in managing the preserve areas of Mediterra to increase the health and diversity of the natural systems while reducing the potential for property damage caused by catastrophic wildfires. It is the responsibility of the operating entities to be familiar and comply with the conditions of the permits and conservation easements in perpetuity.

2.0 EXISTING CONDITIONS

The conservation areas of the Mediterra community total nearly 400 acres, covering approximately one-third of the total land area. These areas were incorporated during the design phase of Mediterra to provide aesthetically pleasing views from residences and the golf course and create visual interruptions between smaller sub-communities while preserving higher quality wetland habit as required by various permitting agencies. This allowed the preserve and conservation areas being intertwined with golf course and residential dwellings throughout the development. The design of the preserve areas relative to homes and other development along with the species composition of the preserves and the vegetative structure and fuel load within the preserves offer a descriptive picture of the fire susceptibility of a community.

2.1 Design

Like many large developments in southwest Florida, Mediterra was designed specifically to retain large expanses of native areas within the development. Retaining these natural areas was accomplished by designing the communities around existing wetlands and incorporating those

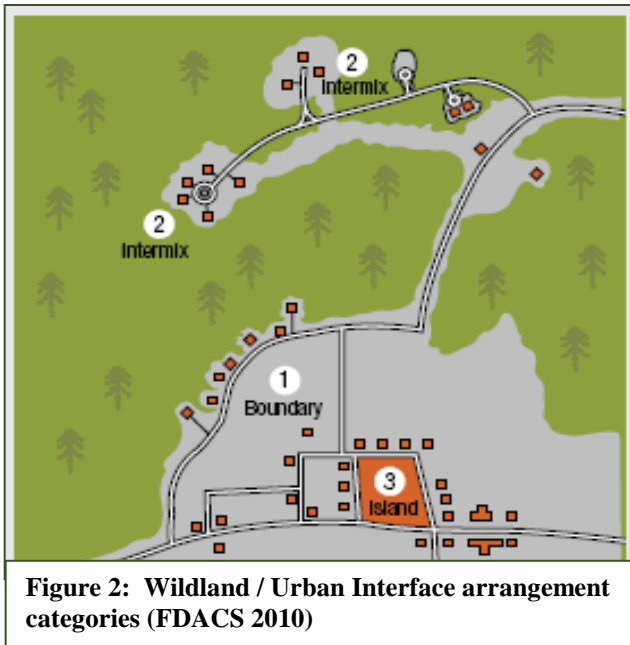


Figure 2: Wildland / Urban Interface arrangement categories (FDACS 2010)

wetlands into the stormwater management system to help regulate their hydrology. Additional upland buffers were also retained to help protect the wetlands from encroachment. This design often results in “fingers” of residential development with preserves, golf course, or lakes on either side. This development pattern results in a Wildland Urban Interface (WUI) arrangement that is best described as “intermix” for much of Mediterra. **Figure 2** depicts the three common types of wildland / urban interface. The “intermix” WUIs are considered problematic and costly to firefighting resources and research has indicated that wildfire damage becomes worse with more WUI and intermix development (Irwin 1987).

2.2 Species Composition

Predominant vegetative communities within the preserves of Mediterra include cypress stands and pine flatwoods, with some small pockets of freshwater marsh and prairie. The cypress communities within Mediterra are associated with occurrences of hydric and mesic flatwoods. In general, most of the cypress stands on site are transitioning from areas with near 100% cover of bald cypress (*Taxodium distichum*), to slash pine (*Pinus elliotti*) intermixed with cypress and cabbage palm (*Sabal palmetto*). Midstory vegetation is increasing and consists of shrubs such as wax myrtle (*Myrica cerifera*), myrsine (*Myrsine cubana*) and various hollies (*Ilex spp.*). Further transition of these wetland areas results in increased coverage by pines and encroachment of saw palmetto (*Serenoa repens*) into understory. The flatwoods with saw palmetto understory often occur near residential structures. This is a relatively common pattern in larger communities, where development was planned in upland areas to minimize wetland impacts and mitigation costs.

Just as certain building materials behave differently or are more flammable than others when exposed to wildfire, certain plant species also perform differently or are more flammable when exposed to wildfire. For example, pine trees are highly fire resistant as long as the flame height does not reach into the crown. However, pines drop needles that often form a thick layer of combustible duff on the ground allowing a fire to move more readily across the landscape. Cabbage palms are also resistant to most fires as they can recover from losing their fronds, however the bases of discarded palm fronds or “boots” (**Figure 3**) often remain on the trunk and can collect pine needles and other combustible material allowing a fire to move up from the ground into the canopy. Saw palmetto is especially suited to survive fires and is often the first species to reemerge after a wildfire has passed through an area, however saw palmetto has been described as Florida’s natural equivalent to a “lake of gasoline” (FDACS 2010) igniting easily and carrying fire quickly during dry conditions while launching firebrands hundreds of feet into the air. “Firebrands are airborne, burning materials or embers that are carried upward by a wildfire and deposited elsewhere. Firebrands can be carried distances of a mile or more by rising hot air currents and winds associated with wildfire. Saw palmetto, cabbage palm, and other types of vegetation tend to form airborne embers when they burn, making firebrands a particular danger in Florida” (FDACS 2010)



Figure 3: Cabbage Palm Boots. (UFEI 2017)

Unfortunately, the vegetative palette found in preserve areas of Mediterra includes several species that are considered highly-flammable by FDACS including slash pine, cypress, cabbage palm, saw palmetto, wax myrtle and gallberry. **Table 1** provides a list of “more-flammable” trees and shrubs found in Florida and **Table 2** provides a list of “less-flammable” trees and shrubs in Florida (FDACS, 2017). Species commonly found in the preserves of Mediterra are highlighted with light green. Since species composition of the preserves areas cannot be altered, species specific consideration must be given when developing a preserve management plan.

Table 1: FDACS List of More-Flammable Trees and Shrubs

TREES			
Pines	Bald Cypress	Red Cedar	American Holly
Italian Cypress	Yew	Leyland Cypress	Yaupon Holly
Boxwood	Melaleuca		
PALMS			
Cabbage Palm	Saw Palmetto		
SHRUBS			
Wax Myrtle	Gallberry	Pampas Grass	Arizona Cypress
Arborvitae	Juniper		

Table 2: FDACS List of Less Flammable Trees and Shrubs

TREES			
Ash	Magnolia	Sweet Acacia	Pecan
Citrus	Maple	Silver Button	Willow
Crape Myrtle	Redbud	Tabebuia	Sea Grape
Dogwood	Sycamore	Gumbo-Limbo	Catalpa
Jacaranda	Viburnum	Red Mulberry	Hawthorne
Loquat	Winged Elm	Red Bay	Elm
Oaks	Citrus	Green Button	Basswood
Peach	Plum	Mahogany	Hophornbeam
Black Cherry	Sweet Gum	Satin Leaf	Blue Beech
Sparkleberry	Persimmon	Pigeon Plum	River Birch
PALMS			
Pindo Palm	Alexander Palm	Sago Palm	King Sago Palm
Queen Palm	Pygmy Date Palm		
SHRUBS			
Agave	Philodendrom	Century Plant	Hydrangea
Aloe	Pittosporum	Coontie	Oleander
Azalea	Red Yucca	Anise	Pyracantha
Viburnum	Beauty Berry	Indian Hawthorne	Camellia
Oakleaf Hydrangea			

2.3 Vegetative Structure and Fuel Load

The preservation of large expanses of natural areas in developments without regular maintenance has resulted in increased fuel loads and alteration of the vegetative structure within the preserves. This increased midstory coverage often outcompetes groundcover species resulting in reduced biodiversity within preserves. Exclusion of fires from natural areas along with restrictions on removing vegetation from preserves allows species like wax myrtle, gallberry, cabbage palm and saw palmetto to increase coverage and grow higher into the midstory. Not only does this increase the fuel load in an area, it also allows the fire to move vertically from the ground into flammable vegetation of the midstory strata and then into the treetops above. Vegetative fuels that enable a fire to move vertically from the ground into the canopy are often referred to as ladder fuels. **Figure 4** depicts two separate types of ladder fuels. The photo on the left shows vines and shrubs crowding into the midstory. The photo on the right shows a midstory of dried cabbage palm fronds that could carry flames into the canopy and be lifted with rising hot air as firebrands.

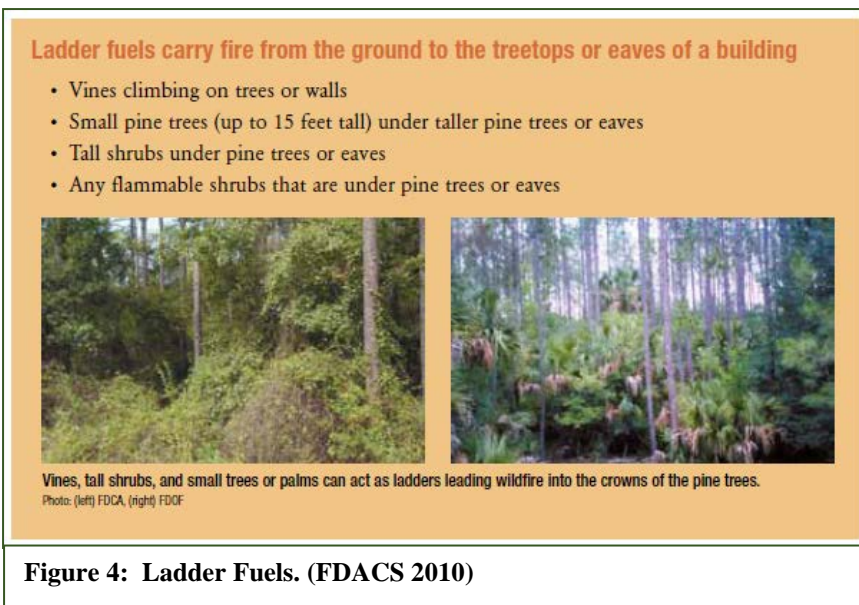


Figure 5: Ladder fuel trapped in palm fronds.

Figure 5 depicts a close-up view of a cabbage palm filled with pine needles, dead palm fronds and other combustible materials that could carry a surface fire into the canopy during wildfires. The preserve areas at Mediterra display an increase in coverage within the midstory strata due to overgrown shrubs and young trees. **Figure 6** depicts a typical pine flatwood preserve area at Mediterra where shrubs have become overgrown. This preserve exhibits limited to no separation between surface and canopy fuels, which is a condition that is conducive to a wildfire quickly intensifying.



Figure 6: Example of vegetative structure observed in a preserve at Mediterra.

Figure 7 depicts a pine flatwood area that has been maintained to reduce vegetation in the midstory. Although different habitats will have differing levels of fuel reduction, this photo shows a healthy pine flatwoods habitat with an open midstory. A wildfire occurring in this habitat would likely have lower flame heights, would burn at a lower intensity and the threat to nearby structures would be greatly reduced.



Figure 7: Example of vegetative structure showing a more open, fire-maintained pine flatwood community. (FPS)

While fuel load was not specifically measured during this assessment, general observations by JEI ecologists, NCFR chief, and FFS staff noted that vegetative structure, fuel load, and vegetative



Figure 8: Example of fuel load in Mediterra in February of 2018.

community conditions were conducive to wildfire in several areas throughout Mediterra. These observations occurred during the 2015/2016 El Niño event when precipitation was above average. During wet conditions, it is unlikely a wildfire would start within, or spread to, cypress habitats; however, the pine flatwood areas remain susceptible to wildfire, particularly given the proximity to human activities. During drought conditions, susceptibility to wildfire could be expected to increase along with the ability for wildfire to spread into cypress habitats. These observations have been further substantiated by the two recent wildfires that have occurred within the community in 2017.

Furthermore, Hurricane Irma in September 2017, caused a lot of additional debris to accumulate in the Conservation Areas. Thick duff layers and fallen, dead debris were observed on the site in February of 2018. **Figure 8** shows a typical duff layer in the Mediterra Conservation Area within 60 feet of residential property.

3.0 FUEL LOAD REDUCTION STRATEGY

The Mediterra Preserve Management Plan will utilize selective hand-trimming of native mid-canopy/groundcover vegetation as the primary management tool to improve the ecological integrity of the preserves and reduce fuel loads within the development. The goal of hand-trimming is to mimic a natural fire regime to the best extent practicable. Trimming must be done in a manner to maintain the integrity of plant material and is to emulate a natural vegetative community, not a landscape area. No living, healthy trees will be removed during the trimming process.

This fuel load reduction method is proposed for the first 60-feet of the conservation areas. A map depicting the locations of uplands and wetlands within the Conservation Easements is provided in **Attachment 3** Mediterra Preserve Management and Fuel Reduction Map. The methods proposed to achieve fuel load reduction are detailed below.

3.1 Hand Trimming to Mimic Prescribed Fire in Upland Buffers (3 - 5 years)

Laborers may use machetes, loppers, and/or chainsaws to trim native vegetation in the mid-canopy/groundcover, following the oversight of the qualified environmental specialist. It is understood that 80% survival is required for all trimmed vegetation. In the event mortality exceeds 20%, restoration plantings will be required. Since the goal of the initial trim is to emulate a natural system under a normal fire regime, this thorough type of trim should not occur more frequently than every three (3) to five (5) years. All trimmings will be removed from the conservation areas by hand. The targeted species and their management guidelines are detailed in **Attachment 5** and below.

3.1.1 Saw Palmetto



Figure 9: Saw Palmetto as observed in Mediterra in February of 2018.

The Mediterra conservation areas contain considerable amounts of dense saw palmetto, which is considered one of the most flammable naturally occurring groups of plants in the southern United States (Doran et al. 2004). As such, saw palmetto fronds may be cut back to the trunk to mimic a prescribed fire during the initial trim to reduce fuel loads in the preserve areas adjacent to residential structures (NFPA 2007). The trimming must be done in a manner to



Figure 10: Saw Palmetto two years post trimming

maintain the integrity of the overall plant material and is intended to emulate a natural vegetative community, not a landscaped area. The trunks of the saw palmetto will not be cut. Saw Palmetto as observed in the Mediterra Community currently is shown in **Figure 9** and the proposed trimming after 2 years of re-growth is shown in **Figure 10**.

3.1.2 Cabbage Palm

The bases of discarded palm fronds or “boots” of the cabbage palm often remain on the trunk and can collect pine needles and other combustible material allowing a fire to move up from the ground into the canopy. Cabbage palm boots, and fronds hanging below 90 degrees from vertical shall be trimmed and removed. Cabbage palms can benefit from losing their fronds and **Figure 11** shows a cabbage palm after the proposed trimming.



Figure 11: Cabbage Palm after proposed trimming

3.1.3 Other Species

Vines may be cut and hand-pulled if they are climbing above three feet in height. Accumulated pine straw and vegetative debris are highly flammable and shall be removed near residential structures (Doran et al. 2004; NFPA 2007). Accumulated duff layers, dead and diseased trees, and palm fronds hanging below 90° from the trunk will be removed.

3.2 Maintenance Trimming (Annually)

As some areas of the preserves likely receive non-target irrigation and fertilization from the golf course and adjacent residences, the potential exists that maintenance trimming may need to be conducted in between the more thorough trims described in Section 3.1. Maintenance trimming should not be conducted more than once per year. When determined necessary, the goal of the maintenance trims should remain to keep fuel loads at an acceptable level and maintain the ecological integrity of the conservation areas. Removal of vegetative debris, such as fallen palm fronds or dead plant material, may occur no more than once per year, to reduce fuel loads in the preserves (NFPA 2007).

3.3 Unlimited Maintenance

It is important to note the frequency of hand trimming guidelines previously described does not apply to invasive exotic/nuisance plant species, including non-native grasses, included on the Florida Exotic Pest Plant Council's Category I and II lists. Exotic/nuisance species included on this list can be removed from the preserve areas at any time without prior authorization from SFWMD staff. The current list of Category I and II exotics is provided in Appendix D of this report for reference. At a minimum, exotic plants shall be removed annually or when they reach more than 20% coverage. Additionally, native and/or non-native ornamentals, not part of the existing indigenous vegetative community, are not allowed within the preserve area and may be removed at any time.

4.0 HOMEOWNER RESPONSIBILITY

4.1 Property Maintenance

The homes in Mediterra are generally constructed and maintained to reduce the risk of burning during a wildfire. However, the following maintenance activities should be used to ensure continued structure resistance to wildfires.

- Remove pine needles and other flammable debris from roofs.
- Replace combustible or meltable soffits and gutters with noncombustible, and non-meltable alternatives.
- Arrange landscaping in separate islands that are divided by at least ten feet of turf or low groundcover.
- Prune tree branches within 15 feet of the house. See **Figure 12** for an example of a cabbage palm on private property touching eaves of home.
- Replace “more-flammable” plants such as saw palmetto, wax myrtle, gallberry, and pampas grass with “less- flammable” substitutes such as cocoplum, beautyberry, and other appropriate native shrubs and groundcover.
- Substitute pine straw mulch with less flammable options such as stones, decomposed granite, sod or even shredded bark.
- Provide 15-foot vegetation clearance around flammable materials such as propane tanks, grills, fire pits, and storage structures.
- Irrigate wisely during dry seasons within local water management guidelines.
- Regularly clean gutters to remove pine needles and other dead vegetation.



Figure 12: Cabbage palm fronds in contact with eaves of home.

- Remove flammable materials including manmade items, which are in direct contact with the home.
- When homeowners are leaving for extended periods, store patio furniture or remove cushions and other flammable items.
- Maintain area along driveway free of large shrubs and trees to allow access for firefighting equipment.

5.0 HOA / CDD RESPONSIBILITY

5.1 Educational Materials and Signage

There are not currently preserve signs located at the residential lot / conservation area interface. It is believed that the implementation of this preserve plan, along with education of the residents, will deter residents from impacting the preserves. Educational material (**Attachment 6**) will be distributed to the current residents and new home owners within Mediterra to emphasize the value of the preserve areas and associated management plan. Notices will be inserted into the monthly newsletter to alert current residents of the upcoming trimming. The Homeowner Responsibilities flyer may also be incorporated into the “New Homeowner” packets distributed to new residents at time of registration with the home owners’ association. Should the development to have compliance problems due to residents conducting unauthorized activities in the preserve, preserve signage may be considered in the future.

6.0 REFERENCES

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ATTACHMENT 1

SFWMD/USACOE PERMITS

ATTACHMENT 2

COPY OF RECORDED CONSERVATION EASEMENTS

ATTACHMENT 3

**MEDITERRA PRESERVE MANAGEMENT AND
FUEL REDUCTION MAP**

ATTACHMENT 4

FUEL REDUCTION
OPINION OF PROBABLE COST

ATTACHMENT 5

MANAGEMENT ACTIVITY
GUIDELINES

ATTACHMENT 6

**EDUCATIONAL
MATERIAL**