Strategic Fire Plan

for

Marin County

UNIT STRATEGIC FIRE PLAN AMENDMENTS

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Strategic Fire Plan developed for Marin County

This Plan:

- Was collaboratively developed. Interested parties, Federal, State, City, and County agencies within the County have been consulted and are listed in the plan.
- Identifies and prioritizes pre-fire and post fire management strategies and tactics meant to reduce the loss of values at risk within Marin County.
- Is intended for use as a planning and assessment tool only. It is the responsibility of those implementing the projects to ensure that all environmental compliance and permitting processes are met as necessary.

June 1, 2013

Unit Chief
Jason Weber

June 1, 2013

Fire Marshal
Scott D. Alber, P.E.

EXECUTIVE SUMMARY

The fire problem in Marin County resides in the wildland-urban interface, where houses and businesses meet or intermingle with wildland vegetation. This is where wildfire poses the greatest risk to human life and property. Principal County stakeholders—those people with an interest in protecting their assets from wildfire—coordinate their public education efforts and project management through FireSafe Marin (Marin County's local Fire Safe Council).

The California Fire Plan provides a framework that is applied in Marin for defining fire hazards and ranking assets at risk in order to identify and prioritize areas where fire threats can be mitigated. A countywide assessment of the wildland fire threat undertaken by CAL FIRE revealed that nearly 80,000 acres are ranked as having moderate to very high fire hazard severity zone ratings. Similarly, an analysis of the wildland-urban interface (WUI) by Marin County Fire Department (MCFD) in Marin revealed that there are 68,559 living units on 64,063 parcels totaling 59,122 acres in Marin County, with an assessed value of $38.2.5 billion.

Marin County will reduce these hazards using an integrated approach that includes the following elements: (1) ridge top fuelbreak network, (2) fire-prone forest clearing, (3) access improvements, (4) wildfire awareness campaign, and (5) International Urban-Wildland Interface Code (with extensive Marin County amendments) enforcement. Nearly 70 miles of fuel breaks will be constructed and maintained along ridge top emergency access roads, highways, and other existing barriers. About 10 percent of this fuelbreak network is already in place. Blue gum eucalyptus and Monterey pine forest within and immediately adjoining created fuelbreaks will be cleared. Overgrown roadside vegetation will be trimmed and turnouts will be improved along primary access roads in interface communities. Our wildfire awareness campaign encourages individual and community responsibility for creating fire-safe conditions. Finally, the International Urban-Wildland Interface Code, applicable to all new and substantially remodeled structures located in the WUI, is being enforced; this code combines building standards, fire apparatus access, and fire-fighting water supply requirements with landscape planning to reduce losses caused by wildfire.

Even though the Marin County Fire Department has been successful in controlling a large portion of all wildland fires within its jurisdiction, one only needs to examine our fire history to understand the risk our communities face. This fire plan will allow the Marin County Fire Department to create a more efficient fire-protection system focused on meaningful solutions to better protect the communities in Marin. Being able to identify areas where cost-effective, pre-fire management investments can be made will help minimize citizen losses and reduce costs from a major wildfire.

***Jason Weber,* FIRE CHIEF**

SECTION I: UNIT OVERVIEW

A: UNIT DESCRIPTION

The fire environment of a community is primarily the product of two factors: the area's physical geographic characteristics and the historic pattern of urban-suburban development. These two factors create a mixture of environments which ultimately determines the area's fire-protection needs.

The basic geographical boundaries of Marin County include National and State Park lands along the Pacific Ocean to the west and south, several suburban communities neighboring the Highway 101 corridor and San Francisco baylands to the east, and rural Sonoma County to the north.

Because of the size of Marin County and its varied microclimates, the characteristics of the fire environment are quite heterogeneous. As such, Marin County has not one, but numerous fire environments, each of which has its individual fire protection demands.

Furthermore, Marin County has a varied topography and vegetative cover. A conglomeration of hills and ridges, with vegetative cover ranging from open grass lands studded with oak and bay to dense forests of Douglas-fir, bishop's pine and coast redwood make up the terrain. Development has occurred as the communities along the Highway 101 corridor have extended west. In addition, development has further spread into the hills and the smaller valleys and canyons of the San Geronimo Valley, Nicasio and Point Reyes Station.

Size and Population: Marin County covers nearly 520 square miles with a population estimated at 252,000. The Marin County Fire Department serves the largest geographic area in Marin County. Within our service area are six (6) fire stations and a total of 86 Fire Department personnel. The Fire Department deftly manages diverse responsibilities including wildland, urban, rural wilderness, freeway, and EMS responses.

Roads and Streets: Lengthy cul-de-sacs generally service new developments. Cul-de-sacs and dead-end roads serve most of the smaller canyons and valleys, and hillsides, as well. Some planned unit developments are served by private roads, which create access problems (i.e., narrow paved widths and limited on-street parking). Roadways with a width of less than 20 feet of unobstructed paved surface, with a dead-ends longer than 150 feet, with a cull-de-sac longer than 800 feet, or with a cul-de-sac diameter less than 68 feet are considered hazardous in terms of fire access and protection. A large number of roadways within Marin County fall into one or more of the above four categories.

Topography: Marin County is a mosaic of rolling hills, valleys and ridges that trend from northwest to southeast. Flat lands are found in the central and northern portions of the County. Most of the existing urban and suburbanized areas are on relatively flat lands (0 – 5% slope). Future residential development is expected in the hill areas of the

San Geronimo Valley, Lucas Valley/Nicasio and Point Reyes Station. In addition, as the value of parcels increase, more marginal lots along Throckmorton Ridge/Panoramic Highway are being developed. The majority of the hillsides and ridges in these areas have slopes ranging from 15 – 30%, and some are 30+%. Elevations are varied in the county with Mt. Tamalpais listed at 2,600 feet above sea level. Marin City and Point Reyes Station are approximately 20 feet above sea level, the San Geronimo Valley is 485 feet, and the Throckmorton Fire Station is at 1,160 feet above sea level, respectively. Correspondingly, there is considerable diversity in slope percentages. San Geronimo Valley slopes run from level (in the valley, itself) to near 70%. Mt. Barnabe has slopes that run from 20 to 70%. Throckmorton ridge has slopes from 40 – 80%. Slope is an important factor in fire spread. As a basic rule of thumb, the rate of spread will double as the slope percentage doubles, all other factors remaining the same.

Vegetation: Marin County's semi-arid climate produces vegetation with specific growth as a result of local topography, proximity to the coast and prevailing wind. In the central and eastern portions of our service area, the south facing exposure is primarily perennial rye grass with occasional clumps of California bay and coast live oak trees in the more sheltered pockets. The north facing slopes are heavily wooded from lower elevations to ridge with oak and bay trees and minor shrubs of the general chaparral class. Many areas in the western portion of our district are heavily forested with Bishop's pine, Douglas-fir and coast redwood. Expansion of the residential community into areas of heavier vegetation has resulted in homes existing in close proximity to dense natural foliage. Often such dwellings are completely surrounded by highly combustible vegetation compounding the fire problem from a conflagration point of view.

B: UNIT PREPAREDNESS AND FIREFIGHTING CAPABILITIES

The Marin County Fire Department is an all risk agency that provides a full range of emergency response services including Emergency Medical Services (EMS), Urban Search and Rescue (USAR) and water rescue teams, structural and wildland fire protection, fire prevention, public education, and hazardous material discharge response. As one of six contract counties with the State of California, the department is responsible for the protection of 205,000 acres of State Responsibility Area (SRA) within the county. Significantly, the Marin County Fire Department staffs an Emergency Command Center (ECC) that dispatches for Marin County Fire Department and local volunteer fire departments, coordinates wildland incidents within the SRA or FRA, and acts as the County of Marin's Office of Emergency Services (OES) coordination center for fire dispatching. During peak season preparedness, MCFD resources include:

MCFD Resources	City/District Resources
145Personnel	200 Personnel
6 Fire Stations	34 Fire Stations
12 Engines	57 Engines
1 Transport/bulldozer	
3 Water Tenders	2 Water Tender

The Marin County Fire Department also participates in local and state mutual aid and auto aide agreements, and various contracts for service:

Memorandums of Understanding/Automatic Aid Agreements

The Marin County Fire Department is one of six counties who contract with Cal Fire to provide all-risk emergency services to state responsibility areas. In addition to this contract there is a well-organized local mutual aid system in Marin County based on the principles of resource sharing and cooperation, the goal of which is to provide the public with the highest level of service no one agency is equipped to provide. These agreements include resources from all fire agencies, law enforcement, volunteer fire departments, Office of Emergency Services (OES), the National Parks Service (NPS), CALFIRE, and local landowners. When MCFD resources are drawn down to a minimum standard while providing assistance to other agencies through the mutual aid system or assistance by hire process, off-duty personnel and reserve equipment are used to maintain standard operational readiness in all of MCFD's responsibility zones.

The following is a list of the mutual aid agreements/plans in which MCFD participates:

- Mount Tamalpais Mutual Threat Zone Plan
- Southern Marin Mutual Threat Zone Plan
- Marin County Mutual Aid Agreement
- County of Marin Urban Search and Rescue
- County of Marin Office of Emergency Services
- State of California Master Mutual Aid

In addition, MCFD provides resources to local stakeholders through various agreements that do not include an annual revenue resource, but in some cases funds are recovered through an assistance-for-hire agreement.

- Marin Municipal Water District
- Skywalker Ranch Fire Brigade
- National Park Service
- Point Reyes National Seashore
- Golden Gate National Recreation Area
- Muir Woods National Monument

The Marin County Fire Department has maintained an independent dispatch center since the 1930s. The Emergency Command Center (ECC) functions to receive, disseminate, and transmit information to field units. The ECC has the additional responsibility to act in a supervisory role for incidents prior to the arrival of field units. The ECC also acts as the central ordering point for all state resources that are committed to SRA incidents in Marin County. In addition to the state responsibility areas, the ECC acts as a central ordering point for Region II OES requests and OES coordination of local government resources entering or leaving the County of Marin operational area.

The ECC is staffed by one 24-hour dispatcher year round. Beginning in the spring each year, a dispatch clerk is hired to work 10 hour shifts, 7 days a week through the end of fire season (generally May 1 through October 31),

supplementing the dispatcher. During complex emergencies the ECC utilizes a call back system to assist in up-staffing for large scale emergencies and has the ability to set up an expanded dispatch center when necessary. The ECC processes approximately 3,000 calls annually, and is also responsible for handling all business calls received by the department. In 2005, the ECC was remodeled and upgraded to incorporate a Computer Aided Dispatch (CAD) system. Additionally, to order, fill, and track requests for OES and State resources, the ECC uses a statewide intercom system and the Resource Ordering Status System (ROSS).

SECTION II: COLLABORATION

A: COMMUNITY / AGENCIES / FIRE SAFE COUNCIL

Organizations involved in the development of the Unit Strategic Fire Plan are included in the following table. Their organization and title are indicated below:

Plan Development Team:

Organization	Title
Marin County Board of Supervisors	Judy Arnold, Board of Supervisors
Marin County Fire Department	Scott D. Alber, P.E., Fire Marshal
FireSafe Marin	Lynne Osgood, Council Coordinator;, Michael Swezy, Chair
Marin County Fire Chiefs' Association	Chief Jim Irving, President
National Park Service	Jordan Reeser, Fire Management Officer
Marin Municipal Water District	Michael Swezy, Watershed Superintendent
California State Parks	Danita Rodriguez, Park Superintendent
Pacific Gas & Electric Company	Eumie Davis, North Bay Forester

SECTION III: VALUES

A: Values

Values at risk are important resources that can be damaged or destroyed by wildland fire. In addition to providing a framework for protecting citizens and firefighter safety, the California Fire Plan identifies the following assets warranting consideration in pre-fire planning: watersheds and water, wildlife, habitat, special status plants and animals, scenic- cultural and historic areas, recreation, rangeland, structures, and air quality.

The Marin Municipal Water District is the oldest private water purveyor in the State of California. The Mt. Tamalpais watershed, feeding a system of six reservoirs, supplies central and southern Marin County with 75% of their fresh water. Given the area's seasonal rainfall, any major wildfire impacting the heavily forested watershed will result in major silting and subsequent degradation of water quality in the watershed.

This watershed—as well as lands managed by Marin County Open Space, State Parks, and the National Park Service—are largely contiguous. They harbor several endangered, threatened, and special-status species. Two prominent species that come to mind are coho salmon and northern spotted owl. The area is also part of a major migrating bird flyway and nesting area.

Marin County is also a major tourist destination. The California State Parks (Mt. Tamalpais, Samuel P. Taylor, China Camp, and Stinson Beach), the National Park Service's Golden Gate National Recreation Area, Muir Woods National Monument, and Pt. Reyes National Seashore attract 2.5 million visitors annually. A major wildfire affecting any of these attractions would have an enormous impact on the local economy for years after the event.

Marin County's agricultural land base includes nearly 137,000 acres of privately owned agriculturally zoned land and 32,000 acres of federally-owned land that is leased to agricultural operators. Types of agricultural operations include cow/calf, dairy, sheep, row crops, grapes, hay/silage, tree crops, poultry/eggs, aquaculture, cut flowers, and nursery crops. The gross value of all agricultural production was $56,181,338 in 2010.

Finally, there are 68,559 living units in the County's identified Wildland-Urban Interface, with an assessed value of $38.2 billion. The impact of a major wildland fire on Marin County's property tax base, and hence the County's budget would be catastrophic. As such, we have focused on the most highly valued asset—structures—with the greatest at-risk structures within the wildland-urban interface.

B: Communities

To help protect people and property from potential catastrophic wildfire, the National Fire Plan allocates funding for projects designed to reduce the fire risks to communities. A fundamental step in achieving this goal was the identification of communities that are at high risk of damage from wildfire. With California's extensive Wildland-Urban Interface situation, the list of communities extends beyond just those adjacent to Federal lands. There are 1,287 communities currently on the California Communities at Risk List. Marin County has 23 communities at risk that are tabulated below.

Community	California At-Risk	Federal Threat	Federally Regulated
Bolinas	√	√	√
Corte Madera	√		
Fairfax	√		
Inverness	√	√	√
Inverness Park	√	√	
Kentfield	√		√
Lagunitas-Forest Knolls	√	√	√
Larkspur	√	√	
Lucas Valley-Marinwood	√		
Marin City	√	√	√
Mill Valley	√	√	√
Novato	√		
Olema	√	√	√
Ross	√		
San Anselmo	√		
San Rafael	√		
Santa Venetia	√		
Sausalito	√	√	√
Stinson Beach	√	√	√
Strawberry	√		√
Tamalpais-Homestead Valley	√	√	√
Tiburon	√		
Woodacre	√		

SECTION IV: PRE-FIRE MANAGEMENT STRATEGIES

A: Fire Prevention

The Fire Prevention Bureau is staffed with three full-time personnel, the Fire Marshal, Forester, and Pre-Fire Engineer. The Fire Marshal/Battalion Chief is responsible for managing all of MCFD's fire prevention programs, which include MCFD's engine company residential defensible space and business inspection programs, land development plan reviews and construction inspections, all fire alarm and suppression system plan reviews, fire investigations, inspections of Hazardous and Assembly occupancies, as well as code and standard development.

The Forester and the Pre-Fire Engineer share joint responsibility for determining where and how to implement vegetation management projects. These projects are developed per the Community Wildfire Protection Program (CWPP), which they also share responsibility for producing and periodically updating. MCFD uses a variety of methods to manage fire-prone vegetation, including constructing fuel breaks, "shaded" fuel breaks (by clearing understory vegetation below the forest canopy), developing and writing prescriptions for controlled burns, and conducting fire prone forest/tree removal projects adjacent to assets-at-risk.

In addition to the Bureau's full-time personnel, the Bureau has retained the services of a Fire Inspector two-days per week. The Fire Inspector's primary duties are to respond to homeowner defensible space inspection requests and complaints. The Fire Inspector also reviews Vegetation Management Plans (a requirement for all new construction and substantial remodels in the WUI).

As part of their effort to identify assets-at-risk during the development of their CWPP, MCFD has identified their Wildland-Urban Interface Zone (WUI). In essence, this zone identifies communities adjacent to, and/or where wildland areas intermingle with structures and homes. Based on this analysis, MCFD determined there are 73,311 structures (68,559 living units) on 64,063 WUI parcels totaling 59, 122 acres with an assessed value of $38.2 billion in Marin County.

Since 2006, MCFD has approached the mitigation of this threat on two main fronts. One approach utilizes public education (mailers, movie theater "trailers", newspaper opinion pieces, public events and workshops), engine company defensible space inspections, as well as complaint driven Company Officer and Fire Marshal/Fire Inspector inspections. The purpose of these activities is two-fold; to raise the level of public awareness of the wildland fire threat, and to increase and improve the defensible space around structures. Our goal is to reduce ignitions by 10% through public education, enforcement, and inspections.

The other approach is to construct fuel breaks. These fuel breaks are constructed by the Marin County Fire Department's Tamalpais Fire Crew and other local resources. The location and extent of the breaks are determined by conformance with MCFD's CWPP, and availability of grant and other types of funding. The budget for the

Tamalpais Fire Crew is provided as a long term "pilot" project funded (from the Marin County General Fund) by the County Board of Supervisors.

The Fire Marshal also serves as a Fire Investigation Team Leader on the Marin County Fire Investigation Team. The Marin County Fire Investigation Team is a multi-agency fire investigation team offering assistance to those agencies requesting fire investigation support on large and/or complex fires, or where the respective agency does not have an investigator available. The team is also included in the Marin County Fire Agency Master Mutual Aid Agreement.

An analysis of MCFD's ignitions for the past several years (2002-2012) indicates that MCFD experiences on average approximately 25 structure fires per year. Similarly, MCFD responds to an average of approximately 60-65 vegetation fires per year. Of the vegetation fires, prevalent identifiable causes include tree branches contacting power lines (or some other power line associated failure), and fires caused by mechanical equipment (hot work, cutting, and agricultural equipment). However, the majority of MCFD's vegetation fires are small, roadside spots of less than a ¼-acre. Although the majority of these fires have been classified as undetermined due to the absence of identifiable ignition mechanisms, many are most probably caused by vehicle exhaust system debris.

1. Engineering & Structure Ignitability

What are the factors that lead to the ignition of homes during a wildfire event? Recent research indicates that wildland fires progress from a fire involving wildland vegetation only, to embers and wildland vegetation igniting domestic vegetation, which then ignites the adjacent structure. Subsequently, the fire morphs in to a series of structure fires, with involved structures igniting other structures.

As such, in addition to the defensible space available around structures, other factors that lead to structure ignition include the configuration of building elements and the type of construction materials used. For example, in Cal Fire Assistant Chief Ethan Foote's study of Santa Barbara's Paint Fire (1993) for his master's thesis, found that an 86% survival rate for homes with non-combustible roofs and 30 feet of defensible space.

Similarly, research indicates that home ignitibility, rather than wildland fuels is the main cause of home losses during WUI fire events. Recent research findings included the fact that, at the Witch and Guejito fires, two out of every three structures destroyed were ignited by embers. The research clearly shows that the key elements in preventing structure loss are as follows:

- Defensible space immediately adjacent to the subject structure such that adjacent ornamental and domestic vegetation is configured to reduce the possibility of the vegetation transferring the fire to the structure.
- Building and construction systems that reduce the accumulation of embers.
- Maintenance of the subject structure such that embers do not find a receptive fuel bed to propagate and support combustion.

The California Building Code (CBC), Chapter 7A specifically, addresses the wildland fire threat to structures by essentially requiring the fire hardening of structures located in state or locally designated WUI or Fire Hazard Severity Zones. However, these requirements only apply to new construction, and do not address existing structures or remodels and additions to existing structures.

To address home ignitibility in both new and existing construction, MCFD has extensively amended the 2003 International Urban-Wildland Interface Code. As part of these amendments, MCFD applies more stringent building standards, vegetation management (requiring the preparation of a Vegetation Management Plan, per MCFD's VMP Standard), fire apparatus access and water supply requirements to new structures and structures substantially remodeled, located in the WUI.

Included in the aforementioned amendments, MCFD requires structures in the WUI that are being remodeled or altered to comply with a standard specifically developed to require those specific building elements affected by the alterations to be "WUI" compliant. For example, if a window is replaced, the new window is required to be dual-paned with one pane tempered.

Furthermore, MCFD has amended the 2010 CFC Chapter 49 requirements for defensible space around existing homes (whose un-amended requirements are identical to the Public Resource Code and Government Code requirements). The MCFD amended version modifies the language of PRC 4291 such that the property line no longer limits the amount of defensible space required around structures.

2. Information & Education

The information and education programs administered by MCFD are coordinated efforts supported by our command staff, the Fire Prevention Bureau, each of our fire stations' personnel, and our cooperators. These cooperators include the Marin County Sheriff's Office, Marin County OES, FireSafe Marin, and the Marin County Fire Chiefs' Association.

Information

During emergency events, the public information function is covered 24 hours per day by Incident Command System (ICS) qualified Public Information Officers (PIO's) and by MCFD's Emergency Command Center personnel. The overall goal of this function is to keep our constituents, the people of Marin County, informed by providing timely and accurate information to the varied media market in the northern Bay Area. In addition, MCFD is in constant contact with Cal Fire's Duty Chief regarding fire condition updates and ensures all local dignitaries are regularly briefed with changes or updates.

In addition, the Fire Marshal, EMS Battalion Chief, as well as MCFD's command staff regularly provide press releases, and interviews to media outlets on request. As an adjunct to these activities, the Fire Marshal and EMS Battalion Chief serve as MCFD's representatives on the county Public Information Team (PIT). This group meets once per month and provides a forum for each department to get their respective messages

out to other departments and the public, enables the county government to have uniformity in the various departments' messages, training, and opportunities to craft department specific informational videos about their programs.

Education

Annually, thousands of Marin County residents attend community events, such as MCFD's Fire Station pancake breakfasts, community fairs where MCFD and/or FireSafe Marin sponsor exhibits, CPR, CERT, "Ready, Set, Go!", and "Get-Ready" classes, and school programs. Presentations include disaster and wildfire event preparedness, home safety, fire safety, defensible space, and vegetation management.

MCFD, along with many of our cooperators and corporate sponsors recently produced a defensible space and wildland fire preparedness video. The video, "Marin on Fire" has several 5-minute chapters, covering access, defensible space, making your home ignition resistant, and tips on what to do if a wildfire is approaching your house. MCFD has also released a 5-minute video whose subject is the few simple things a homeowner can do to increase their home's survival during a wildfire event.

The Fire Chief and Fire Marshal are frequent contributors to the local newspaper, as well. They have both written editorial columns on various aspects of fire safety and disaster preparedness, including such topics as winter/holiday home fire safety, and wildfire preparedness.

MCFD strives to make their wildfire and defensible space safety messages consistent with those promulgated by Cal Fire. As part of this effort, MCFD posts Cal Fire's defensible space flyers and handouts on their website, and has these brochures available at each of our fire stations' lobbies. MCFD also annually (prior to fire-season) sends out a mailer to every property owner in MCFD's WUI zone. The mailer contains a check-list of MCFD's defensible space and maintenance requirements (per PRC 4291), to be completed by the property owner by the start of fire season. The mailer also includes MCFD's modified Cal-Fire Defensible Space flyer, and offers the homeowner a free-of-charge consultation by fire personnel from their local fire station.

B: Vegetation Management

Marin County Resource Management Staff administers the following programs that support the Strategic Fire Plan.

- ✓ **Vegetation Management Program (VMP)** – The Vegetation Management Program (VMP) is a cost-share program that applies prescribed fire and mechanical treatments to reduce wildland fire fuel hazards and address other resource management issues within State Responsibility Area (SRA) lands. Use of prescribed fire models' natural processes, restores fire to its historic role in

wildland ecosystems, and provides significant fire-hazard-reduction benefits that improve public and firefighter safety.

- ✓ **Grant-Funded Fuel Treatments** – These projects generally involve the construction and maintenance of ridge top fuel breaks that are planned from Sausalito to Lagunitas. Removal of fire-prone stands of trees such as eucalyptus and pine are also used to mitigate fire hazards.

- ✓ **Tamalpais Fire Crew** – The Marin County Board of Supervisors funds a 13-person fire crew that is available for project fuel break construction and both initial attack and mop-up fire suppression activities during and after a wildfire incident.

- ✓ **Marin on Fire Video** - "Marin on Fire" has several 5-minute chapters, covering access, defensible space, making your home ignition resistant, and tips on what to do if a wildfire is approaching your house. MCFD has also prepared a 5-minute video whose subject is the few simple things a homeowner can do to increase their home's survival during a wildfire event.

- ✓ **Defensible Space Mailer**- MCFD sends its mailer with a PRC 4291 checklist to all residents within MCFD's WUI zone. The checklist consists of defensible space requirements to be completed by the property owner by the start of fire season. The mailer also includes MCFD's modified Cal Fire Defensible Space flyer, and offers the homeowner a free-of-charge consultation by fire personnel from their local fire station.

- ✓ **Creekside Guide to Fire Safe and Fish Friendly Best Practices**- MCFD prepared and distributed a brochure to 600 creek side residents in the San Geronimo Valley. This brochure provided guidance to concerning methods for controlling flammable vegetation near homes while protecting Coho salmon habitat. Marin County is currently developing a county-wide stream conservation ordinance, of which the guidance contained in the aforementioned brochure is an integral part.

- ✓ **4291 Stand Down** – For the 2013 Fire Season and in conjunction with MCFD's Defensible Space/4291 flyer mentioned above, MCFD is assigning its seasonal firefighters, in conjunction with MCFD's on-duty/full-time personnel to go door-to-door in each station's response zone's target hazard areas. While at each residence, the firefighters would make contact with the occupant/homeowner, conduct a vegetation management/defensible space inspection, and offer tips and suggestions on how to comply with the regulations. If the homeowner is not present or unavailable/unwilling to participate in the inspection, a door-hanger was left at the residence explaining the process and the areas where the residence falls short of the requirements. The inspections are also being

followed up with subsequent re-inspections by station personnel. With this effort, in 2012, MCFD inspected over 1,800 residences in one weekend.

SECTION V: PRE FIRE MANAGEMENT TACTICS

A. DIVISION / BATTALION / PROGRAM PLANS

Wildland-Urban Interface Situation

Marin County includes densely populated urban cities and towns along the eastern Highway 101 corridor from the Golden Gate Bridge northward to Novato. Geographically, Marin is a large, southeast-trending peninsula, with the Pacific Ocean to the west, San Pablo Bay and San Francisco Bay to the east, and across the Golden Gate, the city of San Francisco to the south. Marin County borders Sonoma County to the north. Elevation ranges from sea level to the peak of Mount Tamalpais at 2,574 feet. Unincorporated rural villages within the County include coastal communities (Muir Beach, Stinson Beach, and Bolinas), communities near Tomales Bay (Olema, Point Reyes Station, Inverness, Inverness Park, Marshall, Tomales, and Dillon Beach), and rural villages in the interior valleys (Nicasio, Lagunitas, Forest Knolls, San Geronimo, and Woodacre). The aforementioned communities are primarily situated within or adjacent to the Wildland-Urban Interface, with dense to moderate concentrations of structures. Marin County has 200,000 acres of watershed with significant WUI problems. Response times present significant challenges to keeping fires from directly impacting communities and sub-divisions. Emergency fire access to most Marin communities (especially those within SRA) is limited by narrow, winding roads lined with dense vegetation. Evacuation maps have been developed by the Marin County Sheriff's Office of Emergency Services, the Marin County Fire Department and local police and fire agencies.

Fuels

Plant communities in Marin County are generally defined by the northwest-trending ridges that pass through the County, where non-native annual grasslands dominate south-facing aspects and mixed evergreen forest dominates the north-facing slopes and valleys. Grassland types include coastal prairie and valley grassland; shrubland types include chemise chaparral, Manzanita chaparral, mixed chaparral, serpentine chaparral, coyote brush scrub, and coastal sage-coyote bush shrub; forestland types include coast live oak-California bay-madrone forest, tanbark oak-madrone-live oak-Douglas fir forest, Douglas-Fir Forest, coast redwood forest, bishop pine forest, eucalyptus forest, Monterey pine forest and oak woodland/savannah. Livestock grazing in western Marin generally keeps grasslands short. Conversion of extensive, historically grazed lands in federal and state parkland areas has succeeded to shrubland and timberland. Most vegetation types in Marin present a fire-control problem owing to overgrown conditions due to years of successful fire suppression. Sudden oak death and planted fire-prone forests have also added to the fire problem.

Weather and Fire History

The predominant summer weather pattern includes a strong coastal influence with coastal low clouds and fog in the evening and morning hours, clearing to sunshine and

mild temperatures in the afternoon. The potential for large, wind driven fires is great in Marin, especially under Diablo (foen) wind conditions that occur in late summer and autumn. Under these conditions, fire operations are limited by high fire intensities that create extreme fire behavior conditions: long-range spotting, high rates of spread, and long flame lengths. Indirect attack is the most likely control method under these conditions. Historically the largest and most destructive fires have occurred during these Diablo wind events. Most recently the Angel Island Fire (in October of 2008) consumed over 300 acres (although no structures were affected). The most recent Marin County fire with significant structure loss was the Vision Fire of 1995, which destroyed 48 structures in the community of Inverness. The base of Mt Tamalpais, specifically the community of Mill Valley, also suffered a significant fire loss in 1929; that fire's footprint is now developed with more than 2,000 homes.

Battalion Priorities

- Compliance inspections (4291), the number of structures located within the department's sphere of influence make this a challenge. Significant staff and department resources devoted to this program have resulted in great progress both with numbers of inspections conducted and compliance.
- Community evacuation drills remain a department priority; the next is scheduled for October 2013 encompassing Throckmorton Fire Station's response zone.
- Continue to educate and prepare communities emphasizing "READY SET GO".
- Continue implementation of countywide fuel break and fire plan implementation.
- Cut, pile and burn 1200 piles of volatile fuel in the prescribed project areas.

APPENDIX A: HIGH PRIORITY PRE-FIRE PROJECTS

Batt	Project Number	Project Name	Status	Estimated Completion Year	Project Type	Net Acres
MRN	RX North-048-MRN	MMWD VMP	P	2014	VMP Burn	481
MRN	RX North-049-MRN	Throckmorton Ridge Fuelbreak	A	Completed	Fuel Break	122
MRN	-	TCSD Fuels Management	A	Completed	Fuel Break	49
MRN	-	Muir Beach Pine Removal	A	2011	Tree Removal	11
MRN	-	Smith Eucalyptus Removal	A	2011	Tree Removal	1
MRN	-	Sausalito Fuel Break	A	2015	Fuel Break	56
MRN	-	Marin City Fuel Break	A	2015	Fuel Break	32
MRN	-	Tam Valley Fuel Break	A	2015	Fuel Break	73
MRN	-	Homestead Valley Fuel Break	A	2015	Fuel Break	58
MRN	-	Mill Valley Fuel Break	A	2016	Fuel Break	61
MRN	-	Kent Woodlands Fuel Break	A	2016	Fuel Break	53
MRN	-	San Anselmo Fuel Break	A	2016	Fuel Break	36
MRN	-	Fairfax Fuel Break	A	2016	Fuel Break	63
MRN	-	Woodacre Fuel Break	P	2016	Fuel Break	75
MRN	-	San Geronimo Fuel Break	P	2017	Fuel Break	82
MRN	-	Blithdale Ridge Fuel Break	A	2017	Fuel Break	44
MRN	-	Bolinas Ridge Fuel Break	P	2017	Fuel Break	315
MRN	-	Cascade Canyon Fuel Break	A	2017	Fuel Break	41
MRN	-	Corte Madera Ridge Fuel Break	A	2017	Fuel Break	32
MRN	-	Highway One Fuel Break	P	2020	Fuel Break	145
MRN	-	Inverness Ridge Fuel Break	P	2020	Fuel Break	65
MRN	-	Iron Spring Road Fuel Break	A	2018	Fuel Break	22
MRN	-	Kent Woodlands North Fuel Break	A	2018	Fuel Break	24
MRN	-	Kent Woodlands South Fuel Break	A	2018	Fuel Break	48
MRN	-	Mt. Vision Road Fuel Break	P	2020	Fuel Break	46
MRN	-	Limantour Fuel Break	A	2020	Fuel Break	102

Batt	Project Number	Project Name	Status	Estimated Completion Year	Project Type	Net Acres
MRN	n/a	Muir Beach Pine Removal	C	Completed	Tree Removal	11
MRN	---	Smith Eucalyptus Removal	C	Completed	Tree Removal	1
MRN		Angel Island	C	Completed	Tree Removal	4.5
MRN		Triple C Ranch Sleepy Hollow	A	2014	Fuel Break	9
MRN		Burnt Ridge, Novato	A	2020	Fuel Break	2.5
MRN		Skywalker Ranch, Nicasio	A	2013	Fuel Break/Defensible Space	7
MRN		St. Hillary Open Space	A	2013	Broom Removal	4
MRN		Terra Linda Open Space Preserve	A	2013	Fuel Break	9.5

Status Guide: A = Active, P = Planning, C = Completed, O = Ongoing, M = Maintenance.

APPENDIX B: UNIT GOALS AND OBJECTIVES

Following are the Marin County Fire Department six goals and objectives concerning implementation of the Strategic Fire Plan:

Goal 1: Identify and evaluate wildland fire hazards and recognize life, property and natural resource assets at risk, including watershed, habitat, social and other values of functioning ecosystems. Objective: Collect, analyze, and maintain hazard and resource data, leveraging MCFD's GIS capabilities.

Goal 2: Articulate and promote the concept of land use planning as it relates to fire risk and individual landowner objectives and responsibilities. Objective: Identify the minimum key elements necessary to achieve a fire safe community, and incorporate these elements into community outreach.

Goal 3: Support and participate in the collaborative development and implementation of wildland fire protection plans and other local, county and regional plans that address fire protection and landowner objectives. Objectives: Develop a robust county fire plan by bringing together community-based groups, such as fire safe councils and affected fire and land management agencies. Create and support venues in which individual community members can be actively involved in local fire safe councils, community emergency response teams, FIREWISE and other community-based efforts to develop readiness plans and educate landowners to mitigate the risks and effects of wildland fire.

Goal 4: Increase awareness, knowledge and actions implemented by individuals and communities to reduce human loss and property damage from wildland fires, such as defensible space and other fuels reduction activities, fire prevention and fire safe building standards. Objective: Educate landowners, residents and business owners about the risks and their incumbent responsibilities of living in the wildlands, including applicable regulations, prevention measures and preplanning activities, emphasizing personal responsibility.

Goal 5: Integrate fire and fuels management practices with landowner priorities and multiple jurisdictional efforts within local, state and federal responsibility areas. Objective: Work to remove regulatory barriers that limit hazardous fuels reduction activities.

Goal 6: Determine the level of fire suppression resources necessary to protect the values and assets at risk identified. Objective: Initiate and maintain cooperative fire protection agreements with local, state and federal partners that value the importance of an integrated, cooperative, regional fire protection system and deliver efficient and cost effective emergency response capabilities beneficial to all stakeholders.

State Responsibility Area Description

Marin County is a mosaic of suburban and rural residential areas, agricultural lands, municipal watersheds, and parklands. Each of these areas presents a variety of ignition sources that threaten State Responsibility Areas

Our records management system (RMS) indicated that MCFD responded to 653 vegetation fires and 568 structure fires over the past 10 years. However, our records are incomplete when it to determining the cause of these fires. One of MCFD's goals for the coming year is to update its RMS to capture this data.

The California Legislature directed the Board of Forestry, the California Department of Forestry and Fire Protection, and contract counties including Marin to deliver a fire-protection system that provides an equal level of protection for lands of similar type (Public Resources Code §4130). To evaluate this standard, MCFD used an analysis process that defines a level of service rating that is applied to the wildland areas. The rating is expressed as the percentage of fires that are successfully extinguished with initial-attack resources. The level of service rating provides a powerful tool for setting program priorities and defining program benefits. The level of service rating also provides a way to evaluate the contribution of various program components (fire prevention, fuels management, engineering and suppression) toward the goal of keeping damage and cost within acceptable limits. During the past 5 years, (2007-2012) a total of 310 wildland fires occurred within the jurisdiction of the MCFD. Vehicular and power line fires were the two most common known causes of fires. Fires ranged in size from small roadside spots to 104 acres, averaging less than 1.0 acre (excluding the two largest fires). Extended attack was required in all cases where fires burned more than 10 acres; additional support in the form of a hand crew was also needed where fires burned in heavy fuels. Level of Service is calculated as follows:

Fires Extinguished by Initial Attack	304
Total State Responsibility Area Fires	310
Level of Service = ------ x 100 =	**98%**

EXHIBIT: MARIN LAND USES MAP

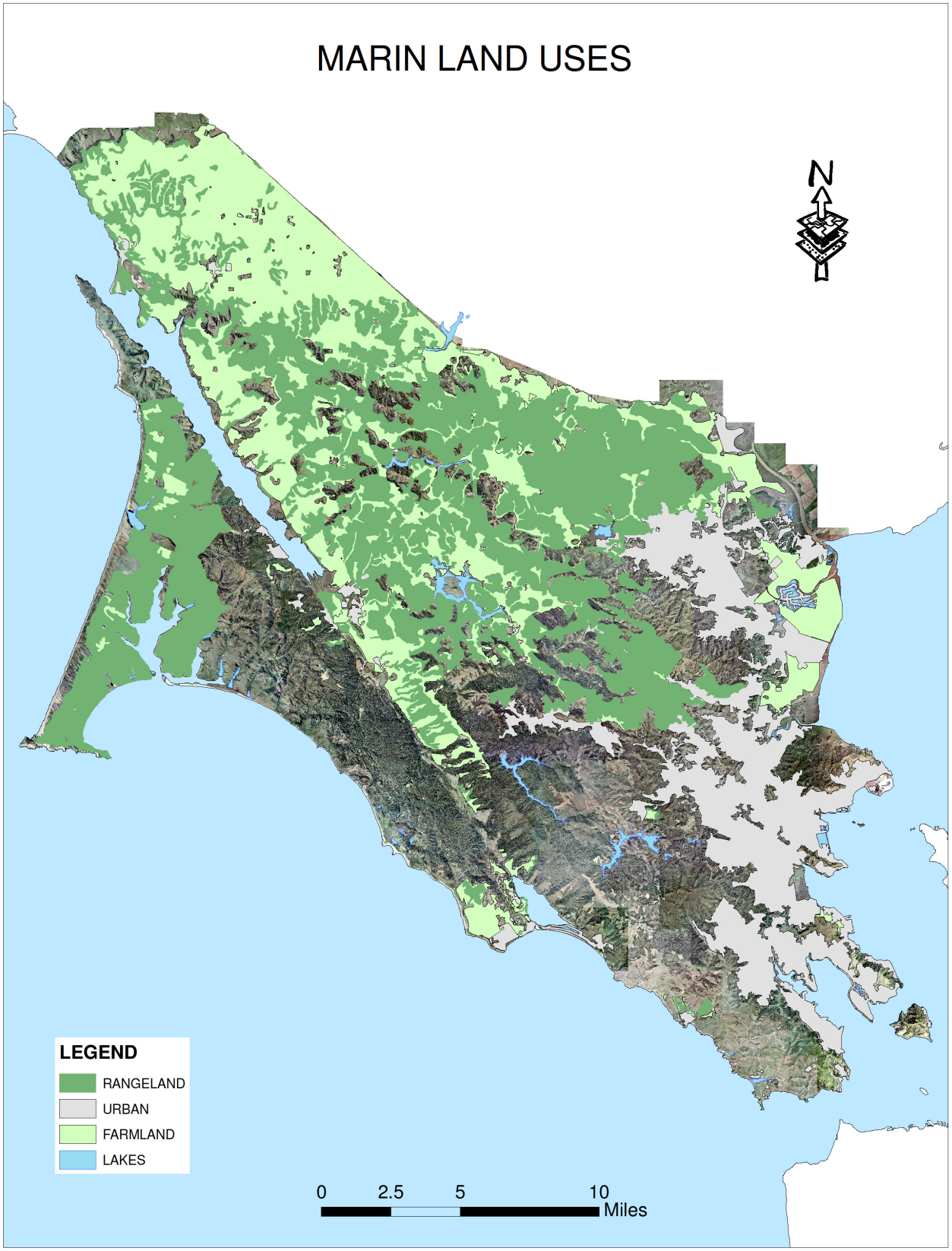


EXHIBIT: CONTRACT COUNTY MAP

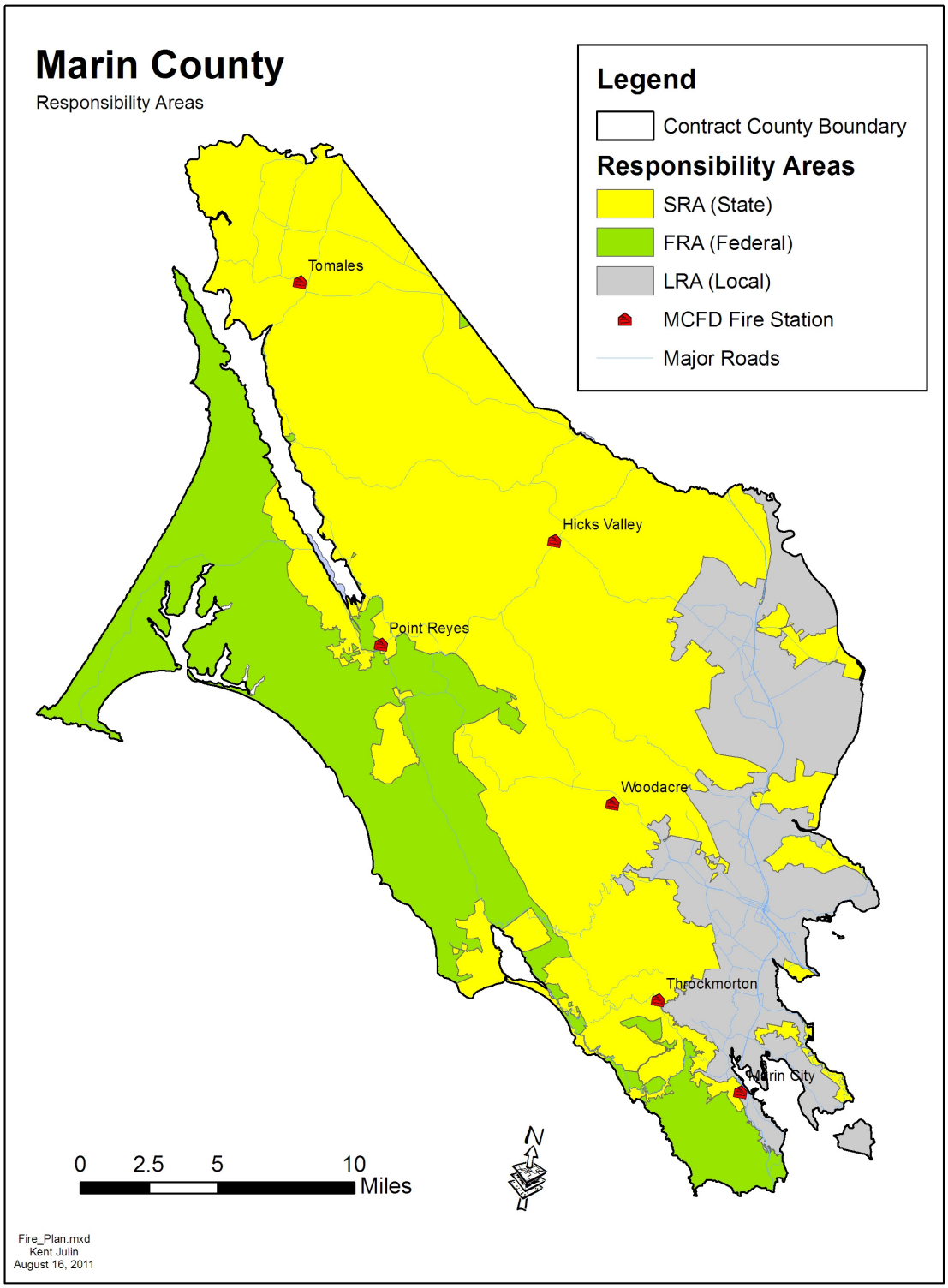


EXHIBIT: WILDLAND URBAN INTERFACE MAP

WILDLAND URBAN INTERFACE

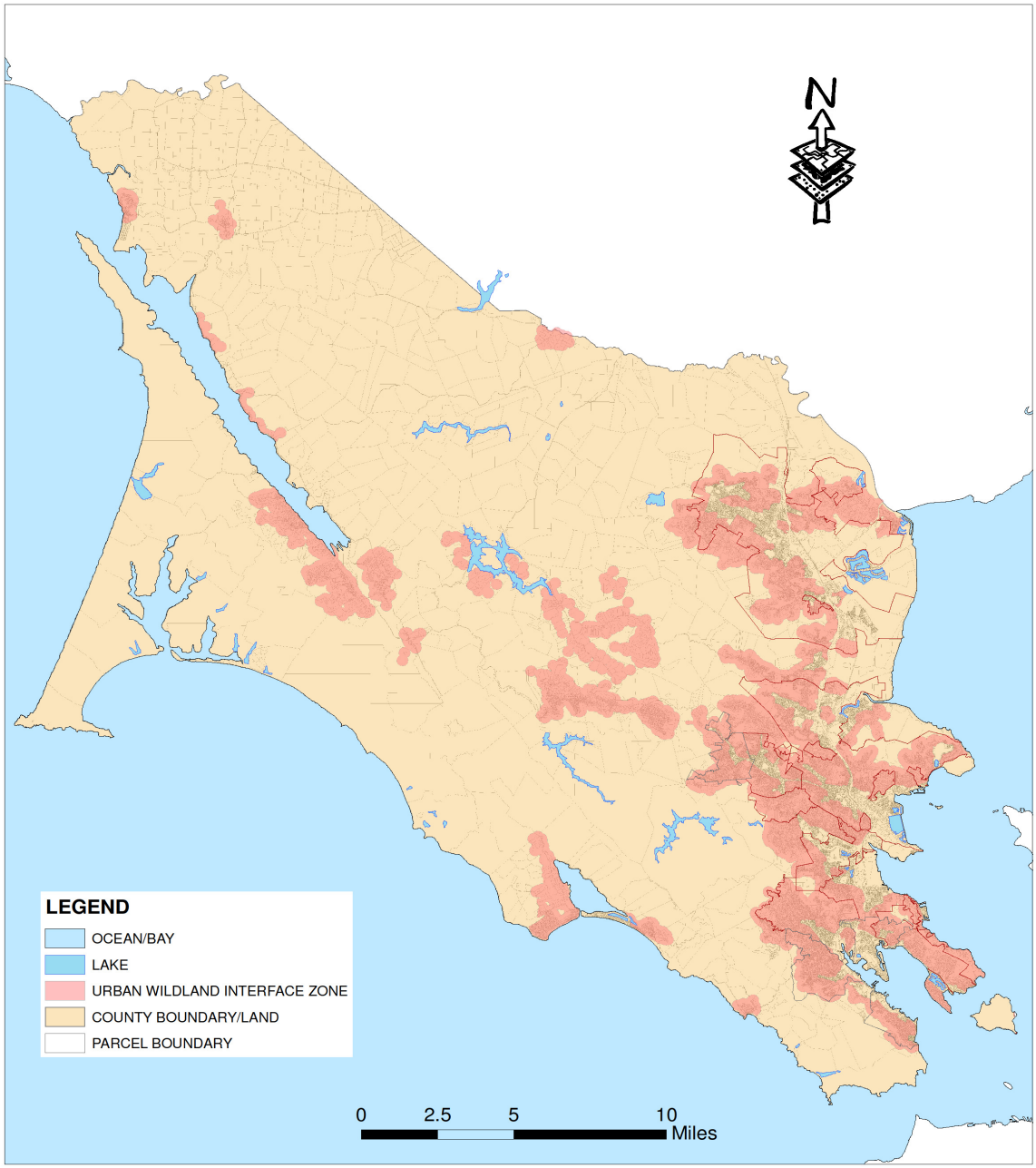
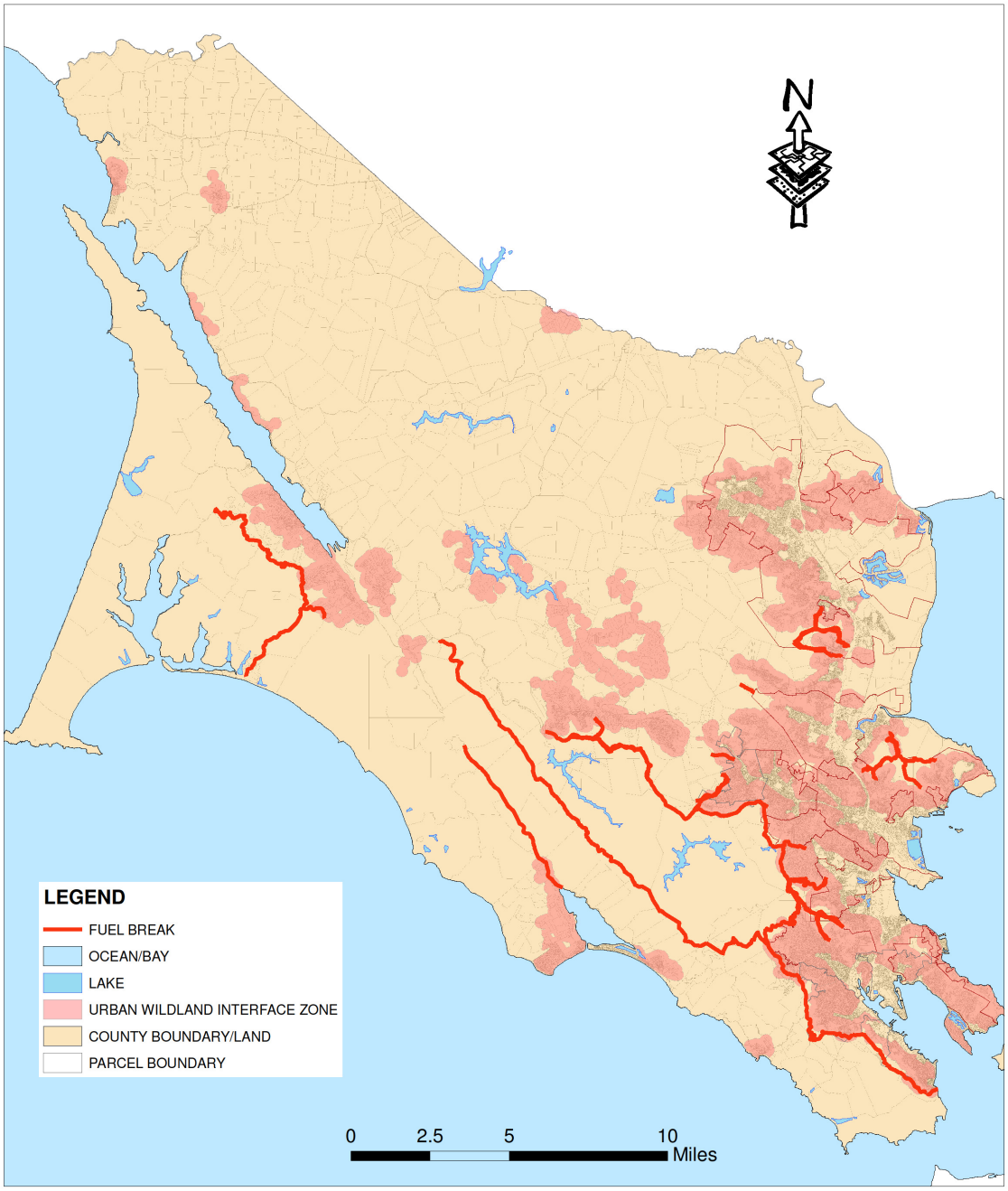


EXHIBIT: PROPOSED FUEL BREAK NETWORK MAP

MARIN FUEL BREAK NETWORK



SUPPLEMENT: 2013

Annual Report of Unit Accomplishments

The Marin County Fire Department accomplished the following in 2012-2013 in support of our Strategic Fire Plan:

1. *Conducted 1,900 inspections during our 2012 §4291 Blitz in some of our highest hazard neighborhoods where 545 first-notice violations were issued,*

2. *Mailed out more than 6,000 Green Card Notifications (§4291 requirements) to residents (with return correspondence required) concerning implementation of defensible space requirements.*

3. *Cut, piled and burned 238 piles on the Burnt Ridge Fuel Break located on the Hill Ranch in Novato*

4. *Cut, piled and burned 464 piles on the Triple C Ranch Break located in Sleepy Hollow-Ross Valley*

5. *Cut, piled and burned 321 piles on the Skywalker Ranch Fuel Break located in Lucas Valley*

6. *Burned 150 Eucalyptus piles located in Camp Reynolds-Angel Island State Park*

7. *Thinned and chipped trees along Limantour Road-Point Reyes National Seashore.*