

California Department of Forestry and Fire Protection



Madera-Mariposa-Merced Unit Fire Management Plan 2005

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Signature Page:

Gary L. Marshall _____ Date: _____
Unit Chief
Madera-Mariposa-Merced Unit

State of California
Madera-Mariposa-Merced Unit



Legend

- County
- Unit Boundry
- County

0 85 170 340 Miles

Figure 1 MMU Location Map

Executive Summary

The increased fuel loading in our wild lands, coupled with the ever increasing urban interface population, creates a recipe for disaster. Increasing numbers of bug-killed trees, acres of brush, environmental restrictions, areas of unhealthy forests, and sources of ignition all contribute to large and damaging wildfires. In addition, our ground water resources are being substantially compromised as wild fires in the watersheds directly influence the quantity and quality of our water supplies.

In the past several years major wild fires have dominated the Western United States. The National Fire Management Plan was established as a source of funding for fire protection agencies to reduce fuel loading and to provide for public awareness programs to help educate homeowners in providing “Defensible Space” around their homes. Fuel reduction projects have taken a back seat to the education programs. Constraints placed on agencies in administering the funding sources have hampered the execution of these projects. Lengthy and sometimes costly, environmental impact reports, limited staffing levels for CDF and cooperating agencies, and budget restraints have also contributed to extended delays in planning and accomplishing pre-fire projects.

The past year has seen an increase in public awareness of fire prevention. The need for fuel reduction was again emphasized through the efforts of the Mariposa Fire Safe Council, the Eastern Madera Fire Safe Council, North Fork Mono Rancheria, the South West Inter-Face Project Team and the Madera-Mariposa-Merced Unit’s fire prevention bureau. Every year educational inserts are included in the local newspapers, called “Living with Fire” and “In Harm’s Way” to educate the public of the continuing threat of wildfire to our local communities. The Fire Safe Councils, CDF, and the Sierra National Forest regularly provide presentations to communities at risk to wildfire. During these presentations the public is provided with information on how to reduce the threat to their communities both individually and collectively.

The South West Inter-Face Team (SWIFT) is a group of agencies working together to reduce the threat of wild fire in the southern Tuolumne & northern Mariposa county urban-wildland interface. There are approximately 132,000 acres located in the SWIFT area and to date over 40 miles of fuel break have been constructed and almost 13,000 acres of fuel treatment activities have been completed.

Three Fire Safe Councils are actively involved in educating the public in wildfire preparedness and fuel reduction projects. All three councils have obtained their non-profit status and have received well over \$750,000 through the National Fire Management Plan for education, planning and on-ground fuel reduction projects. The Eastern Madera County Fire Safe Council has received a Proposition 40 grant for almost \$360,000 to construct a shaded fuel break in the Oakhurst area along Potter Ridge, which is located between Deadwood Mountain and Miami Mountain.

Cooperative planning continues with the Sierra National Forest Bass Lake Ranger District, to construct fuel breaks along National Forest lands which are adjacent to or would otherwise enhance SRA fuel break continuity.

Pacific Gas & Electric (PG&E) continues to integrate their power line clearance projects with CDF fuel reduction projects.

Other fuel reduction projects are being planned in “Target Areas” which will be discussed in depth later in the plan.

MMU is committed to the implementation of the Unit’s Fire Management Plan and will continually strive to utilize its resources to accomplish the goals and objectives within it.

I. Stakeholders

Stakeholders are defined as any person, agency or organization with a particular interest - a stake - in fire safety and protection of assets from wildfires. The Madera-Mariposa-Merced Unit has made an attempt to involve the stakeholders and their interests in the planning of the MMU Fire Management Plan. The process of identifying stakeholders and their interests is an ongoing process and is evaluated continuously through the evolution of future prefire management plans. It is the goal of the Madera-Mariposa-Merced Unit to participate with as many stakeholders as is possible and to continually update planning efforts involving stakeholder input.

The primary stakeholders within MMU include the Eastern Madera County Fire Safe Council and the Mariposa County Fire Safe Council. Both are instrumental in bringing a conglomeration of other stakeholders to “the table”. The councils shed light on many concerns within the communities and expose information relating to the effectiveness of MMU’s fire safe efforts. The North Fork Mono Rancheria has developed a fire safe group to address the needs and education of its citizens to fire safety. The Rancheria works along with the Eastern Madera County Fire Safe Council to reduce fuels on tribal and trust lands in the North Fork area. Other stakeholders contributing to the Unit’s Fire Management Plan on a regular basis include the Sierra National Forest, Bass Lake Ranger District, Mariposa County Fire Department, Madera County Fire Department, Madera County Resource Conservation District, and the Bureau of Land Management.

The Unit is able to respond and adapt to activities that address many of the concerns from the different stakeholders. Through the fire safe councils’ involvement with the local communities the cooperating agencies have been able to develop pre fire and fire prevention projects that otherwise may never have developed. MMU, in cooperation with the fire safe councils, has recently experienced fire safe successes and some of them some will be mentioned later in this Fire Management Plan. The stakeholders list is dynamic and includes all of the stakeholders at one point in time. Essentially, it is a snapshot during a motion picture.

The key issues are to reduce fuels in and around communities at risk to wildfire and educate the public about living with fire. There is a collaborating effort among all the stakeholders to accomplish this task. There are a number of committees designed to address various issues and they have developed strategies and long term solutions. One example of this is the Southwest Interface Team (SWIFT) which addresses fuel reduction

projects and pre fire tactics in the northern portions of the Mariposa County, the southern portion of Tuolumne County, and the Stanislaus National Forest.

The Mariposa County Fire Safe Council has received grants for fuel reduction and education projects in Mariposa County. Madera County along with CDF, Mariposa County and the Sierra NF are working on a project that involves the Healthy Forest Restoration Act of 2003 to reduce fuels in and around “Communities at Risk”.

II. General Description of Current Fire Situation

The primary goal of wildland fire protection in MMU is to protect the wide range of assets found within the unit from the effects of wildfire. The wildland protection system was created and funded to protect both public and private assets at risk. The following have been identified as assets at risk from wildfires: timber, watershed, wildlife, unique scenic and recreation areas, range, wildlife, air quality, structures and people.

Assets at Risk

Asset at Risk	Public Issue Category	Location and ranking methodology
Hydroelectric power	Public welfare	1) Watersheds that feed run of the river power plants, ranked based on plant capacity; 2) cells adjacent to reservoir based plants (Low rank); and 3) cells containing canals and flumes (High rank)
Fire-flood watersheds	Public safety Public welfare	Watersheds with a history of problems or proper conditions for future problems rank based on affected downstream population
Soil erosion	Environment	Watershed ranks based on erosion potential
Water storage	Public welfare	Watershed area up to 20 miles upstream from water storage facility, ranked based on water value and dead storage capacity of facility
Water supply	Public health	1) Watershed area up to 20 miles upstream from water supply facility (High rank); 2) grid cells containing domestic water diversions, ranked based on number of connections; and 3) cells containing ditches that contribute to the water supply system (High rank)
Scenic	Public welfare	Four mile view shed around Scenic Highways and 1/4 mile view shed around Wild and Scenic Rivers, ranked based on potential impacts to vegetation types (Grass, brush, tree, etc.)
Timber	Public welfare Environmental	Timberland ranked based on value and susceptibility to damage
Range	Public welfare	Rangeland ranked based on potential replacement feed cost by region, owner, and vegetation type
Air quality	Public health Environmental Public welfare	Potential damages to health, materials, vegetation, and visibility; rank based on vegetation type and air basin
Historic buildings	Public welfare	Historic building rank based on fire susceptibility
Recreation	Public welfare	Unique recreation areas, areas with potential damage to facilities, rank based on fire susceptibility
Structures	Public safety Public welfare	Rank based on housing density and fire susceptibility
Non-game wildlife	Environment Public welfare	Threatened and endangered species locations and habitats based on input from California Department of Fish and Game and other experts.
Game wildlife	Public welfare Environment	Threatened and endangered species locations and habitats based on input from California Department of Fish and Game and other experts.

Asset at Risk	Public Issue Category	Location and ranking methodology
Infrastructure	Public safety Public welfare	Infrastructure for delivery of emergency and other critical services (e.g. repeater sites, transmission lines)
Ecosystem Health	Environment	Rank based on vegetation type and fuel characteristics

Table 1 Assets at Risk

The assets at risk have been divided into 450 acre parcels for manageability and evaluation purposes within the unit. These 450 acre cells are designated as Quad 81st. This designation is based on the sectioning of a USGS 7.5 minute quadrangle map divided into a 9x9 grid pattern; the result is squares of 450 acres. Fire Management Plan assessments are made at the Q81st level therefore; each Q81st in MMU has a ranking applied to it for LOS, AAR, fuel hazards, etc.

Fire protection resources are limited primarily by budget constraints. Therefore, resources are allocated, in part, based on the rank of the asset. The assets are ranked, high, medium and low, as to their susceptibility to wildfire. (For more information regarding the evaluation of asset wildfire susceptibility, refer to the California Fire Management Plan.) The ranking is scaled to the Q81st and transferred to GIS maps. The map overlays have been evaluated by unit staff. The areas with the highest combined asset values and fire risk have been targeted for pre-fire management activities (See Target Area Map). Many factors are involved in target area identification, including political climate of the region and fire suppression cost reductions.

The process of enumerating assets at risk also aids in identifying who benefits from those assets. The MMU Fire Management Plan is structured on the California Fire Management Plan which allocates those who benefit from the protection of an asset should pay for that protection. Throughout MMU many cooperative pre-fire management projects have been established and accomplished. New projects are continuously being evaluated and prioritized. MMU has been relatively successful in apportioning its resources based on public versus private benefits. The primary reason for MMU's effective cost apportionment efforts is evident through the Department's Vegetation Management Program (VMP), where a cost apportionment formula is built into the contract. VMP is the Unit's primary tool for pre-fire management projects however; budget reductions have nearly eliminated VMP as a tool for fuel reduction projects in MMU.

Ignition Workload Assessment (Level of Service)

The Level of Service (LOS) rating is a ratio of successful fire suppression efforts to the total fire starts. It divides the annual number of small fires extinguished by initial attack by the total number of fires. This number is then multiplied by 100 to get a percentage. This method measures initial attack success and failure rates of small fires throughout the Unit. The LOS uses a Geographic Information System (GIS) that overlays a 10 year history of wildfires onto a map and derives the average annual number of fires by size, severity of burning and assets lost. This data provides a LOS rating, in terms of a success and failure calculation.

Success Rate =

Annual number of fires that were small and extinguished by initial attack

Total number of fires

*100 = Success rate in percent

The result is an initial attack success rate in percentage based on vegetation type and area. Success is defined by fires that are controlled before unacceptable damage and cost are incurred and where initial attack resources are sufficient to control wildfires.

A matrix is used to define and display successful initial attacks in this framework. The matrix axis defines fire sizes and intensities. The body of the matrix contains the fire activity workload for the fire management analysis zone.

The general matrix has five columns for fires of different sizes and three rows for different intensity levels. The actual size classes and intensity levels are defined for regions of similar vegetation types. The dark shaded portion of the matrix indicates fires that would be expected to exceed budget protection. The lightly shaded portion indicates successful initial attack suppression, or fires that are normally contained within allowable suppression costs.

In this matrix, the lightly shaded area represents fires that are successfully attacked and the dark shaded area represents fires that weren't successfully attacked. This designation of successful matrix cells is the same for planning belts.

Planning Belts are areas consisting of similar vegetation types. These areas have similar fire behavior characteristics and are based on the Fire Behavior Prediction System fuel modeling correlation.

MMU has four planning belt types; Grass, Brush, Conifer and Woodland.

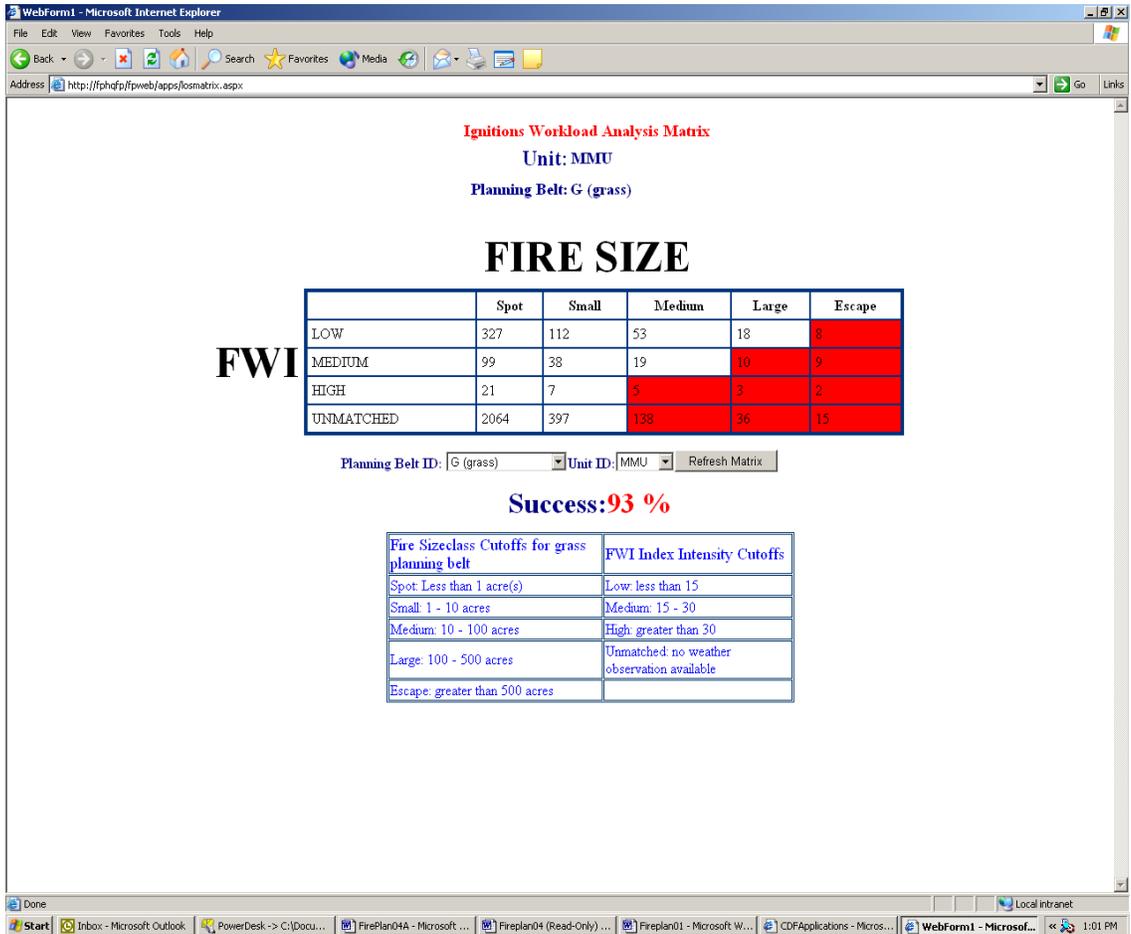


Chart 1 Level of Service (Grass)

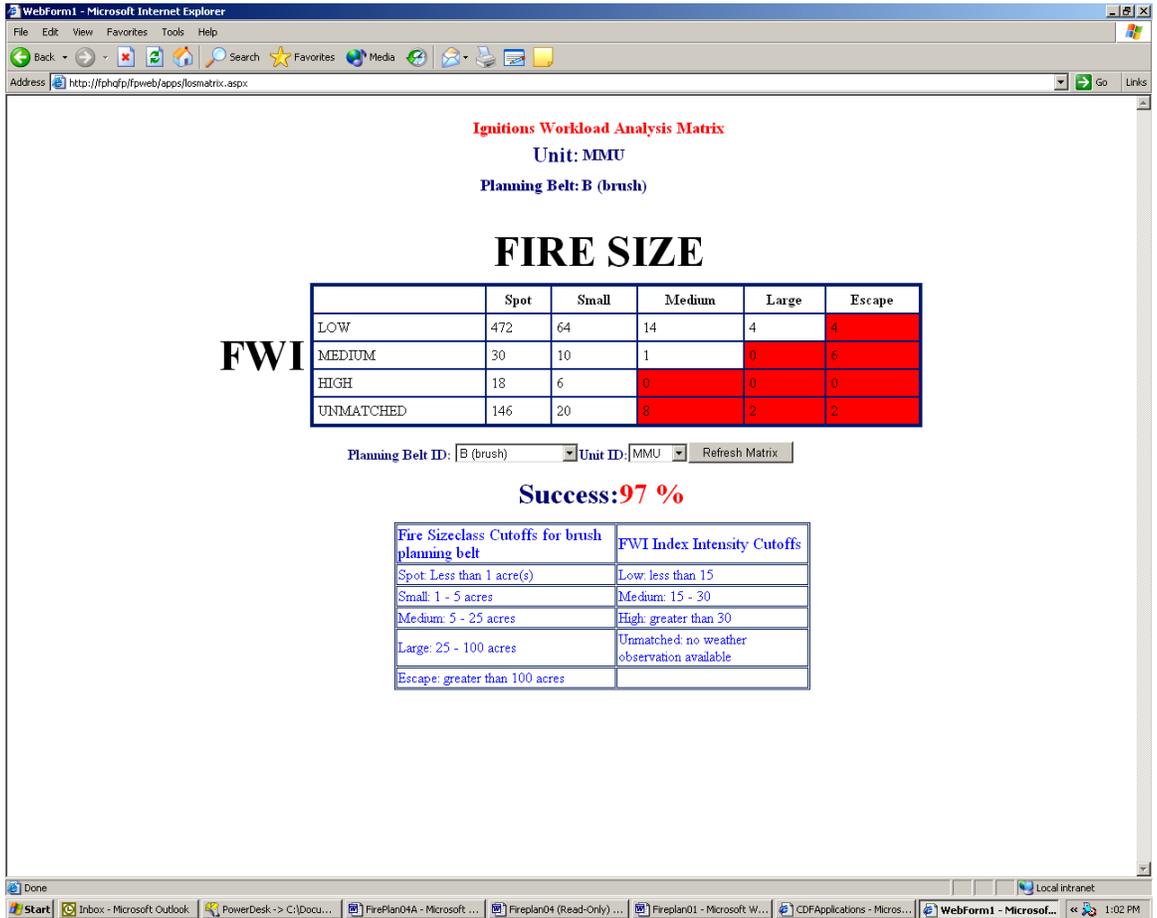


Chart 2 Level of Service (Brush)

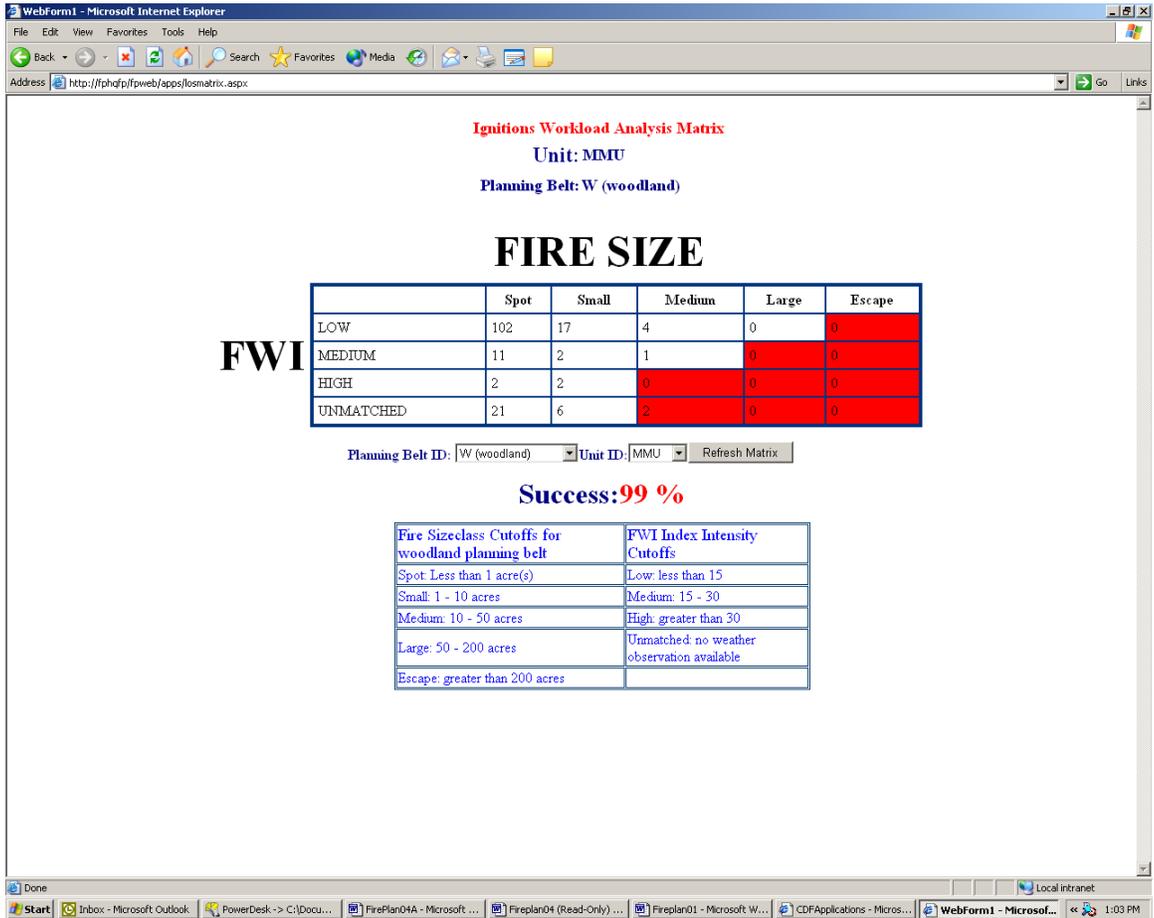


Chart 3 Level of Service (Woodland)

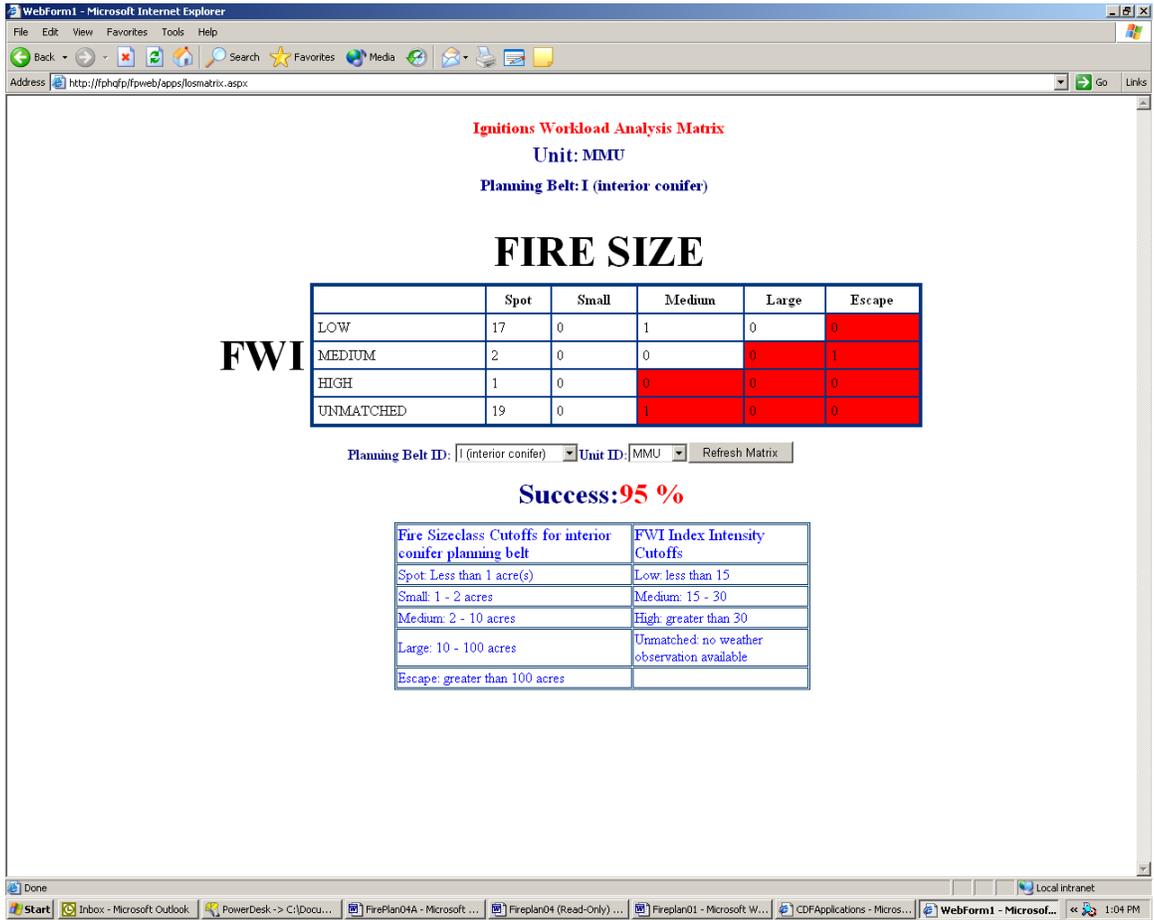


Chart 4 Level of Service (Interior Conifer)

Fuels

Fuel, in the context of wildland fire, refers to all combustible material available to burn on an area of land. Grass, brush and timber are the most common fuels found in our mountain ecosystem. Each fuel has its own burning characteristics based on several inherent factors. These factors include its moisture content, volume, arrangement and the plants genetic make up. All of these contribute to how a fire spreads, its intensity, and ultimately, its threat to assets.

Fuel loading is measured in tons per acre. Grass is considered a light fuel with approximately $\frac{3}{4}$ tons per acre fuel loading. On the other end of the spectrum, thick brush, a heavy fuel, can have a volume of over 21 tons per acre. The intensity of the fire is directly related to fuel loading. Grass burns rapidly with a short period of intense, maximum heat output; brush on the other hand has a long sustained high heat output making it more difficult to control. Therefore, it is necessary to identify areas containing the more hazardous fuels in order to better manage the hazardous conditions by high fuel loads.

Hazardous Fuels Assessment

Fuel arrangement is critical in wildland fire behavior for it dictates how a fire spreads. Un-compacted fuels, such as grass, spread fire rapidly since more of its surface can be heated at one time. Compacted fuels such as pine litter burn slower because heat and air only reaches the top of the fuel. Vertical arrangement refers to a fuel's ability to spread upward into treetops. These are called *ladder* fuels and are influential factors on fire spread. The ignition of ladder fuels allows the fire to spread from the ground into the treetops. *Crown* or *canopy* refers to the tops of trees and is very important in stands of burning timber. A fire once introduced by ladder fuels to the tops of dry conifers can spread as rapidly as a grass fire from treetop to treetop.

In an attempt to predict fire spread, the U.S. Forest Service has developed 13 fuel models that categorize fuels by their burn characteristics (Table 5). Four groups are used to classify fuels: grass, brush, timber and logging slash. The fuel model characteristics have been utilized to determine planning belts in the unit. The following is a brief description of the fuel models commonly found in CDF's wildland protection area of Madera, Mariposa and Merced Counties:

Model 1: This model is used for dry grass with an average depth of 1 foot and a fuel loading of .75 tons per acre. Fires in fuel model 1 burn rapidly with flame length averages of 4 feet. This is probably the most common model in our area and it reflects nearly all of the grasslands found in the foothills below an elevation of approximately 1000 feet, including the west side of Merced County.

Model 2: Like fuel model 1, fires in fuel model 2 spread primarily by dry grass, however shrubs, pine or oak cover between one third and two thirds of the area. The material from these plants contributes to the fire intensity. Four tons of fuel exists per acre and the fuel bed depth is 1 foot. Fires in fuel model 2 burn slower but more intensely than fuel model 1. Indian

Lakes in Madera County, Highway 140 just north of Catheys Valley, and the top of Pacheco Pass are examples of this fuel type.

Model 4: This is a brush model and is characterized by stands of mature brush 6 feet or more in height with more than 16 tons of fuel per acre. Fires in this fuel model burn intensely (19 foot flame lengths) and spread relatively quickly. This fuel type is found in some areas of the Merced River Canyon and in the Coulterville-Greeley Hill area.

Model 5: Litter cast by shrubs in the under story carries fire in this brush model. The fires do not burn intensely (4 foot flame lengths) or rapidly since the young shrubs are green and their foliage does not burn. This fuel type is common at about the 2000 to 3000 feet elevation range of the Sierras, especially in the early months of summer while moisture is abundant.

Model 6: Unlike model 5, fires in this model will burn in the foliage of standing vegetation, but only when wind speeds are greater than 8 mph. Fires burn with an average flame length of 6 feet and spread at a rate of 2,112 feet/hour. Interior live oak, young chamise and manzanita are all associated with this fuel model. In many instances, a fuel model 5 will evolve into this model by the latter part of summer.

Model 8: This model reflects slow burning, low intensity fires burning in the leaf or needle litter under a conifer or hardwood canopy. These fires do not pose a threat unless low fuel moisture or high winds allow the fire to spread into the foliage. This model is found locally in areas treated for fuel reduction. It' low fuel buildups reflect the ideal fire behavior.

Model 9: Fires in this model also burn in needle or leaf litter under a conifer or hardwood canopy, but at a faster rate and a higher intensity than fuel model 8. Concentrations of heavier, dead material add to the likelihood of the fire spreading to the crowns of trees. This model is found in very limited areas under timber stands mostly where fuels have been reduced or low intensity fires have occurred over the last decade.

Model 10: Fires in this timber model burn with greater intensity (4.8 feet flame lengths) than the other timber models. This is to the amount of dead and down fuel accumulations, mostly in the form of large limbs and fallen trees (12 tons/acre). Fire burns at a moderate rate but "torching" of individual trees is common and can cause embers to spot ahead of the main fire. Crown fires are also a threat in this fuel type. In dry or high wind conditions fires in fuel model 10 can be very difficult to control. This fuel model is found in many areas of Madera and Mariposa Counties where stands of ponderosa pines or other conifers are present.

The local distribution of the fuel models is illustrated in Table 2. The table shows that the density of combustible material increases with elevation. Models 1 and 2 (grass) are found at the lowest elevations. Brush is found at the next higher elevation and timber above that, at the National Forest boundary. Local conditions also affect distribution.

North facing slopes tend to get slightly more rainfall and less sun, thus heavier vegetation grows on the north side of the mountain. Soil conditions can also preclude the growth of heavy fuels allowing only hardier species such as chamise to sprout. MMU has a wide variety of fuel types requiring a variety of fuel management prescriptions.

Fuel Model #	Fuel bed depth (feet)	Tons per acre (live)	Tons per Acre (dead)	Flame Length (feet)	Spread Rate (feet/hour)	Comments
1	1	0	.74	4	5195	Dry grass. Common in areas under 1000' elevation.
2	1	.5	4	6	2331	Dry grass with 1/3 to 2/3 brush or tree canopy. Very common above 1000'.
3	2.5	2.5	3.01	12	6926	Grass model, not found locally.
4	6	5.01	16.03	19	4995	Thick brush with heavy dead component.
5	2	2	3.5	4	1199	Young or green brush with fire in the litter only.
6	2.5	2.5	6	6	2131	Mature or dry brush with foliage that will burn when exposed to wind.
7	2.5	2.5	4.87	5	1332	Brush model, not found locally.
8	.2	.2	5	1	107	Timber or hardwood with fire burning in light litter underneath.
9	.2	.2	3.48	2.6	499	Timber with fire in slightly heavier litter then model 8
10	1	1	12.02	4.8	526	Timber with heavy dead material underneath.
11	1	1	11.52	3.5	400	Light logging slash from a partial thinning operation
12	2.3	2.3	34.57	8	866	Moderate logging slash
13	3	3	58.1	10.5	899	Heavy logging slash

Table 2 National Wildfire Coordinating Group Fuel Models

The next phase of determining fuel hazard ratings for the MMU involves the combining of crown fuel characteristics and surface fuel characteristics. The method ascribes additional ladder and crown fuel indices to surface fuels on a specific area. If the vegetation data provide sufficient structural detail, the method imputes these additional indices from those data. If the vegetation data lack structural detail, the method imputes indices based on the fuel model. In MMU the majority of indices were based on the FPBS fuel models.

The potential fire behavior drives the hazard ranking. A rank is attributed to each Q81st in SRA within the unit. The ranking method portrays hazard ratings as moderate, high or very high. The final map displaying the fuel hazard ranks for CDF's Direct Protection Area (DPA) in MMU is used as another factor for determining pre-fire

management target areas, fire size potentials and information for stakeholders with interests in ecosystem management, fuels management, and pre-fire management.

Knowledge of fire behavior in various fuel types is essential for designing a defensive plan against wildfire. Fires in grass burn rapidly but can be stopped by a roadway or plowed fire breaks. Fires in brush often burn with an intensity that prevents fire crews from safely applying water to the flame front. Fires in timber can ignite new fires (called spot fires) miles ahead of the main blaze, making control efforts very difficult and dangerous. Wide scale pre-fire management programs can help reduce the likelihood of a potential wildfire catastrophe.

Fire History

Wildfire history is a significant factor of the pre-fire management planning process. The Fire Management Plan assessment framework incorporates detailed information when determining the most beneficial locations for pre-fire management projects, an idea of the level of service on SRA for the unit, and various assets at risk information. Fire history is a piece of the puzzle that allows unit personnel to learn from the past and make an attempt to plan and prepare for future fire behavior. Having knowledge of fire history provides an account of historic fire travel in a particular area. Armed with knowledge of historic fire spreads fire suppression personnel are better equipped to predict current and future fire spread potentials. Identifying where the largest and most damaging fires have occurred is a necessary step in preparing for future wildfire. The most significant aspect of fire history in MMU is that personnel are able to compare the relationship between identified assets at risk and the historic burning patterns of wildfire. This allows for a more informed decision making process when preparing Fire Management Planning documents and procedures.

Figure 6 displays wildfire history on SRA in MMU between 1978 and 2004. The fires shown are 300 acres and greater through 1998. Fires recorded from 1999 through 2001 are 100 acres and greater, from 2002 until 2003 fires 50 acres or greater and currently 10 acres and greater. The map display signifies patterns that are used in pre-Fire Management Planning processes.

Fire Weather History

Wildfire behavior is influenced by three factors known as the fire environment. The fire environment involves fuel, weather and topography. Of these factors, weather is the most influential factor on fire behavior. Identifying patterns and locations of extreme wildfire behavior provides another tool for pre-fire management planners to use when attempting to reduce the costs and losses of wildfire.

In MMU, the severe fire weather assessments have been calculated through the collection of data from weather stations throughout the unit down to the Q81st level. The average number of days that each Q81st experiences severe fire weather has been calculated and displayed on a GIS map. This map is utilized in the planning process by overlaying the map on fire history maps, fire ignition maps and level of service maps. Furthermore, fire weather history has been incorporated into the level of service ratings for MMU which provides a more accurate depiction of the wildfire protection level of service within the unit during severe weather conditions (See appendix).

III. Vegetation Management

Attainment of the fuels reduction goals of the MMU Fire Management Plan will require on-the-ground effort on the Department's part. Use of CDF Fire Crews (California Department of Corrections), other personnel and equipment will likely be necessary in many areas where stakeholders do not have the finances or resources to do an effective job individually or as a group. The Vegetation Management Program (VMP) is currently the primary vehicle by which CDF resources may be used on privately owned lands. Since 1981, the program has been an effective fuels reduction and rangeland improvement tool.

VMP is a cost-share program; the State's share of a project's cost range from zero to ninety percent. This is based on a public benefits formula, which means the greater benefit to the public, the greater the share of the cost of the project CDF assumes. Fuel reduction projects in critical areas identified in this plan will have a high public-to-private benefits ratio; therefore the Unit's efforts will be concentrated in these areas. For example, a project in the Chowchilla River drainage that will reduce fuels around Ponderosa Basin or Lushmeadows will have a high public-to-private benefit ratio, so a lower landowner contribution is justified. Conversely, projects that are essentially range improvement burns that are not near population concentrations will require a higher degree of landowner proportional costs. This does not mean that rangeland burning is not minor important. Within the last century, range improvement burns have been vital in managing wildland fuels on a landscape basis. However, increasing population in the rural areas has brought constraints such as smoke management and liability concerns. Such constraints have made the LE-7 / range improvement projects less attractive and has put VMP projects in higher demand with ranchers in the unit.

The unit currently has a variety of VMP projects in various stages of preparation;

Battalion 1:

- 1.) Adams VMP – Prescribed Fire/Fuel Modification
800 Acres
Delayed –Pending resources
- 2.) Old Toll VMP – Prescribed Fire/Mechanical Fuel Modification
Acres 1700
Delayed –Pending Resources
- 3.) Hunters Valley VMP – Prescribed Fire/Mechanical Fuel Modification
Acres to be determined
Delayed –Pending Resources
- 4.) Greeley Hill VMP – Prescribed Fire/Mechanical
Acres 2000
Delayed –Pending BLM Budget approval

Battalion 2:

- 1) Ponderosa Basin VMP – Shaded Fuel Break
35 Acres
Pile burning being conducted by staff personnel during NIRA. Additional widening of some parts of the fuel break is being constructed by Mt. Bullion Conservation Camp.
- 2) Von Der Ahe Estate VMP
329 Acres
In-process
A cooperative project with the Mariposa RCD
- 3) Lushmeadows VMP – Fuel Reduction/Fuel Break
350 Acres
Project completion date – The roadway right-of-way phase of the project has been completed. The fuel break phase has been delayed pending available resources.
- 4) Long VMP – Prescribed Fire
Acres 450
Projected completed date 07/20/04

Battalion 4:

- 1.) Oakhurst Basin VMP – Fuel Break/Fuel Modification
Phases 1, 2 and 3 have been funded through a Proposition 40 grant obtained by the Eastern Madera County Fire Safe Council.

IV. Ignition Management

The Fire Prevention Battalion Chief has compiled statistics of fire prevention activities in MMU. The results are compiled in the Ignition Management Plan (IMP). The Unit Prefire Management Plan is intended to eventually replace the traditional IMP. Until then the MMU Prefire Management Plan will incorporate elements of the traditional IMP. This MMU Prefire Management Plan will be a baseline document for which future prefire management plans will be developed and expanded on. During the implementation of this plan there will be an effort to implement processes, such as phasing out the IMP.

The statistics displayed in this section of the plan will be evaluated and utilized as tools in the "Action Plan" portion of the MMU Pre-fire Management Plan. Chart 1 displays the fire ignitions by cause on SRA in MMU.

Cause Summary

The subsequent description of fire ignition causes is a result of fire reporting information on SRA in MMU and represents fires for calendar year 2003 and 2004. This information is essential for determining the types of fire prevention activities that are emphasized in the Unit Fire Management Plan.

	<u>2003</u>	<u>2004</u>
<u>Miscellaneous:</u>	201	56
<u>Undetermined:</u>	71	47
<u>Vehicle:</u>	70	72
<u>Debris Burning:</u>	40	61
<u>Arson:</u>	20	15
<u>Electric Power:</u>	15	5
<u>Playing with Fire:</u>	10	12
<u>Equipment Use:</u>	5	15

<u>Campfires:</u>	5		3
<u>Lightning:</u>	13		1
<u>Smoking:</u>	3		3
<u>Railroad:</u>	0	.	0
Total SRA Fires	453		290

Public Resources Code 4291 LE-38 Inspection Report

A portion of the Public Resources Code 4291 (PRC4291) requires a minimum of 100' of clearance for fire safety surrounding all structures on State Responsibility lands in California. This fire safe clearance has several benefits relating to wildfire protection. First, the clearance provides a "Defensible Space" for firefighters during structure protection activities. Second, the clearance reduces the potential of fire spread into the wildland should a fire burn a structure. Third, the clearance buys time and reduces fire spread from the wildland into a structure. The benefits of defensible space have been recognized by fire suppression forces nationwide. Thus, a significant effort has been invested in the inspection program. (Actual inspections are referred to as "LE-38 Inspections"). MMU has participated in an aggressive property inspection program and through this Fire Management Plan efforts may be better focused. The subsequent figures are an account of the inspection efforts exerted by MMU personnel.

There was a marked increase in inspections unit wide due to the ability to hire 4 FFI's during the pre-season to concentrate on LE-38 inspections

LE-38 TOTALS AS OF DECEMBER 31, 2004

BATTALION 1

Total Inspections	2465
Total Violations	33
Citations	0

BATTALION 4

Total Inspections	1677
Total Violations	37
Citations	0

BATTALION 2

Total Inspections	640
Total Violations	83
Citations	0

BATTALION 5

Total Inspections	2696
Total Violations	168
Citations	2

BATTALION 3

Total Inspections	313
Total Violations	8
Citations	0

BATTALION 7

Total Inspections	42
Total Violations	18
Citations	0

BATTALION 8

Total Inspections	0
Total Violations	0
Citations	0

Total Inspections Performed Unit Wide = 7,833
Total Violations Unit Wide = 347

Public Resources Code 4290

The Public Resources Code 4290 (PRC4290) contains requirements pertaining to new construction on SRA in California. Driveway widths, slopes, turn-around areas, and water storage requirements for firefighting forces are regulated in PRC 4290. MMU personnel are tasked with inspecting the new construction within the unit, specifically Mariposa County. Madera and Merced Counties have county employees that conduct inspections while Mariposa County does not. Therefore, the responsibility goes to the state, or CDF to conduct inspections. This task is taken seriously and there has been an effort to inspect 100% of new construction projects in MMU.

	<u>2003</u>		<u>2004</u>
New Permit reviews:	874	Madera	111
		Mariposa	490
		Total	601

Both Madera and Mariposa Counties building permits are reflected for 2003 and 2004. No report was received from Merced County.

All inspections dated 2003 were finalized in arrears for 2003. None were carried over to 2004. This should be standard practice to reflect actual statistics by calendar year.

V. Action Plan

Goal Statement

The goal of the MMU Fire Management Plan is to reduce costs and losses from wildfire within the unit. This action plan identifies the process that MMU will take to achieve this goal. MMU staff has identified and prioritized seven target areas that will receive the majority of prefire management activities in MMU. The target areas have been identified based on criteria provided from the battalion chief and the Fire Management Plan assessment process, which will be discussed in this section.

Target Area Statement

The process of selecting the target areas for pre-fire management activities in MMU involve review of assets at risk information combined with evaluating stakeholder input, fire history, staff experience, level of service data, fuel hazard ranks and severe fire weather information. Each battalion provides one target area, after which, the areas are prioritized. In January the Battalion Chiefs meet to review the unit's accomplishment within the target areas. The target areas are reviewed and re-prioritized by the Battalion Chiefs if necessary. Objectives and mitigation prescriptions are developed for each target area. Due to the lack of resources, including personnel and equipment, many of the goals and prescriptions have been carried over from last year.

Target Area #1 - Battalion 4

AREA DESCRIPTION:

Target area #1 is in Battalion 4, which involves the areas of Oakhurst, Nipinnawasee, Ahwahnee and Miami Saddle. (See Figure 10) Some of the influencing factors involved in identifying this target area includes: fire history, housing density, fuel hazard, timber values and range. Fire ignitions have not traditionally been a problem here. However, this target area is a direct threat to fires that start in the Chowchilla River drainage, where the Unit has had a significant fire history. Additionally, the target area is identified as having significant asset values with medium and high fuel hazard rankings; therefore efforts will emphasize threat protection. Fuel management will be the emphasis when mitigating the wildfire hazard in the area.

GOAL:

The goal of Battalion 4 is to reduce the costs and losses from wildfire within the battalion and the Unit, and to establish the target area that has been identified in the Unit Fire Management Plan as the number one priority within the battalion. In addition, the battalion supports community action efforts such as Crooks Mountain Fuel Break Project, managed by the Eastern Madera Fire Safe Council, which uses State Proposition 40 funds to create a fuel break between the Chowchilla River basin and communities located east of that drainage.

OBJECTIVES:

- I. Support the local Fire Safe Fire Council and help heighten public awareness about the importance of fuel reduction in the area as it relates to assets at risk in the area.
- II. Implement an aggressive LE-38 inspection program within the battalion.
- III. Continue to educate the public through personalized contact with fire station personnel.
- IV. Support Unit and local Fire Prevention activities with a consolidated effort from station personnel.

ACCOMPLISHING THE OBJECTIVES:

- I.
 - a. Support and assist the local Fire Safe Council within the area.
 - b. Solicit VMP projects within the battalion.
- II.
 - a. Attempt to achieve 100% on LE-38 inspections in Nipinnawasee, Crooks Mountain and Road 628 in Ahwahnee.

- b. Achieve 100% LE-38 inspections on China Creek, John West Rd., Indian Springs Rd., Stillmeadow and Pierce Lakes Estates in and around Oakhurst.
- c. Achieve 100% inspections in the Sky Ranch, Yosemite Forks, Redwood Creek, and Ponderosa Acres subdivisions and around the Bass Lake residential areas.
- d. When the engines at Ahwahnee and Bass Lake FFS are staffed for fire season, implement a systematic method for doing inspections on a daily basis.

III.

- a. Continue to educate the public with the new policy of year-round burning permit requirements.
- b. Utilize the Fire Prevention Public Education Materials.

IV.

- a. Utilize station personnel to assist with fire prevention activities throughout the Battalion.

Target Area #2 - Battalion 2

AREA DISCRIPTION:

Target area #1 is in Battalion 2 and involves the northern portion of the Chowchilla River drainage from south of Highway 49 including the Watt Fire Road area¹ to Ponderosa Basin and West to the Bootjack area. (See Figure 10) The influencing factors involved housing density, timber, fire history, and fuel hazard ratings. Most of MMU's large damaging fires have originated within this target area. The fires that start in this area immediately threaten high value/ high-risk exposures. The historic ignitions are difficult to manage, therefore, the emphasis of efforts will involve fuel management activities and protection of asset exposures.

Priority: 1 Ponderosa Basin Fuel Break Project

This project is the Battalion's top fire mitigation project. The high residential concentration on small lots with heavy fuel loading characterizes the area. The area also has experienced a significant fire history although the developed area itself has not been burned in over fifty years.

The project calls for the creation of a shaded fuel break along the northwestern boundary of the community, a public education program and a complete PRC 4291 inspection program. The fuel break has been financed using the CDF Vegetation Management Program and grant funding. Private equipment working under contract and CDF fire crews have completed about 75% of the project, The personnel dollars required to complete the educational component's of this project were diverted away from Battalion II.

It is anticipated the Mariposa High School Grizzly Fire Department will be utilized to perform a major PRC 4291 inspection program in the area.

Project Goals:

- 1) Complete the fuel break and burn residual brush piles.
- 2) Obtain 100% compliance with Public Resources Code 4291 using Mariposa Grizzly Fire Department to perform the inspection.

Project Needs:

- 1) One Fire Captain is needed to be available for the project through out the next year.
- 2) A Fire Captain or Fire Apparatus Engineer is needed to be available for two months to assist with the hazard inspection program.
- 3) A Fire Captain is needed for approximately six months to assist with fuel the break construction.

Priority: 2 Stockton Creek Fuels Management Project

Completed

Priority: 3 Von Der Ahe Hazard Mitigation

In 1998, a local landowner, Wilford Von Der Ahe, injected herbicide into nearly all of the oak trees on a 200+ acre parcel of land in the lower Stockton Creek drainage. His intention was to have the dead trees removed and replace with either conifers or open, grazing land. The removal of the dead trees never occurred and the landowner has subsequently died.

There is now an accumulation of dead fuels that exceeds 7 tons per acre in a drainage that is situated below several populated areas. A public road also runs through the treated area, which increases the ignition risk. Should a fire start, it will quickly become unmanageable and threaten homes along Allred and Triangle roads. In the interest of public safety, CDF has become proactive in removing these fuels.

The Von Der Ahe Estate has indicated a willingness to enter into a VMP agreement with CDF to begin the removal of the trees. Due to the heavy fuels dozer piling and burning is the best tactic to employ. This will take approximately one to two months of work for a Heavy Forestry Equipment Operator (HFEO).

Project Goals:

- 1) Enter into a VMP agreement with the Von Der Ahe Estate to remove the dead fuel in the Stockton Creek drainage.
- 2) Begin piling the dead fuels for burning in the winter.

Project Needs:

- 1) One Forester 1 personnel month to establish a VMP agreement and conduct the environmental studies.
- 2) Two Fire Captains and one HFEO for one month to begin piling the dead fuel.

Target Area #3 - Battalion 5

AREA DESCRIPTION:

Target area # 3 is in Battalion 5 and comprises of the area just north of the community of North Fork. This area was chosen for similar reasons as the first two. Fuel hazard, housing density, timber and range were the major factors. This target area has not had a significant fire history; however topography, fuel loading and historic knowledge of potential fire control issues all contribute to this area being priority area number three. Fuel reduction efforts, as a result of fire exclusion, will be emphasized. Additionally, public education will be a product of fuel management activities.

GOAL:

The goal of Battalion Five is to reduce costs and losses from wildfire within the Battalion as well as the Unit and establish the target areas that have been identified in the Unit's Fire Management Plan as number one priorities within the Battalion.

OBJECTIVES:

- I. Support the local Fire Safe Council and help heighten public awareness about the importance of the fuel reduction process.
- II. Conduct an aggressive LE-38 program.
- III. Continue to support Unit and local Fire Prevention activities with a consolidated effort from station personnel.

ACCOMPLISHING THE OBJECTIVES:

- I.
 - A. Aggressively participate in stakeholder fuel management projects such as the Proposition 204 grant, within the target area.
 - B. Support local Fire Safe Council efforts within the area.
 - C. Utilize Department Fire Prevention public education materials.
 - D. Conduct one VMP project biannually within the area.
 - E. Oversee CDF's role in the Proposition 204 projects and assist with field inspections.

Page 2

- II.
 - A. Utilize engine crews to achieve a 100% LE-38 inspection rate in the Cascadel Wood's sub-division, North Fork proper and Road 274.
 - B. Utilize engine crews to achieve a 100% LE-38 inspection rate in the Quartz Mountain and Indian Lakes sub-divisions.
 - C. Utilize Volunteers-In-Prevention in the Yosemite Lakes sub-division to assist with the LE-38 inspection program, to achieve 100% inspections.
- III.
 - A. Utilize Volunteers-In Prevention to assist in public education school programs throughout the area.
 - B. Utilize the newly organized Explorer Program to assist in public education programs.
 - C. Continue to emphasize involvement of engine crews in public education programs.

Target Area #4 – Battalion 1

AREA DESCRIPTION:

Target area #4 involves the Hunter's Valley, Greeley Hill and the Bear Valley areas. These communities are in Battalion 1. They have significant timber values, significant fire history, and a medium to high fuel hazard rank interspersed with a medium housing density.

Goal Statement:

Our goal statement for the New Year is even more simplified than last, continue to eliminate unwanted wildfire within the Battalion boundaries utilizing the "Battalion Fire Prevention Plan".

YEAR IN REVIEW

The 2004 fire season was relatively quiet in Battalion One, even though many initial attack fires were kept under ten acres. Three significant fires within the Battalion boundaries were concentrated in the Catheys Valley and White Rock areas. The largest of the three was a three hundred acre 'front county' fire started by a cigarette. The two fires in the Catheys Valley area although not large in acreage, held the most potential for damage. The fire prevention effort from Catheys Valley FFS and the great initial attack firefighting at the start of these fires are two reasons why they were contained at approximately 50 acres each.

This past year, the VMP projects within the Battalion moved forward, however none of these projects were completed. The Adams VMP, an eight hundred acre prescribed burn in the Catheys Valley area, was prepared for burning, but due to limited resources and air quality issues it was not completed. The Hunters VMP is still in the planning stages. The "Hunter Fire" in 2000 burned a significant 'black line' in front of the planned Hunters VMP. This project is scheduled to be completed in September 2006. The number one priority VMP burn within the Battalion is the Greeley Hill VMP. This project is approximately 200 acres and sits on a southwest facing slope between the communities of Coulterville and Greeley Hill. This project is the first line of defense in keeping the community of Greeley Hill safe from wildfire. It is located mostly on BLM ground and is "direct protection area" for the Coulterville FFS. In conjunction with the Greeley Hill VMP, the Mariposa/Greeley Hill Fire Safe Council, under guidance from BLM and CDF, has proposed a fuel reduction project around the privately owned structures that are situated east of, and along the ridge line adjacent to, the VMP. This project will utilize private contractors to reduce the fuel and support the efforts of the VMP.

This past year all three fire stations, Catheys Valley, Hornitos and Coulterville participated in an aggressive PRC 4291 program. Each year the stations target selected areas within their initial attack responsibility. Hornito FF was able to complete 100 percent of its inspections. Catheys Valley FFS also was able to complete 100 percent of its initial attack area. Coulterville FFS targeted the Greeley Hill area and completed 50 percent of its target area.

This past year in conjunction with the Unit's fire prevention staff MMU again was able to conduct school programs in Catheys Valley, Coulterville and at the continuation school in Hornitos. Station personnel will again provide that support in the up coming year.

Target Area #5 – Battalion 2

AREA DESCRIPTION:

Target area #5 is in Battalion 2 and involves the Midpines area. The area has a history of significant wildfire; in fact firefighters have died as a result of extreme fire behavior. The fuel hazard ranking, timber values, housing density, the Stockton Creek Watershed, which provides drinking water for the community of Mariposa and local knowledge of fire control difficulties all combine to justify the designation of this area #5.

OBJECTIVES:

- 1) Reduce wildfires in the Midpines area.
- 2) Protect the Stockton Creek Watershed

PRESCRIPTIONS:

The Battalion priority has been focused in the area of Target area 2 which is the Ponderosa Basin fuel break. The projects in the Midpines area have been delayed pending available resources.

With the assistance of the Mariposa Fire Safe Council, the homeowners in the Davis Road area of Midpines have completed a fuel reduction project in their community.

The Von Der Ahe VMP project is located within the Stockton Creek Watershed, which originates in the Midpines area. This project will directly protect the town of Mariposa when a wildfire occurs in the Stockton Creek drainage. A VMP contract has been secured with the Von Der Ahe Estate to remove dead fuels in the Stockton Creek drainage.

Target Area #6 – Battalion 7

AREA DESCRIPTION:

Target area # 6 is in Battalion 7 and involves an area west of Interstate 5 and south of the city of Los Banos. This area has significant fire history and continues to draw firefighting resources during early fire season events. The area experiences extreme fire weather due to wind patterns and exposure. Ignitions are numerous due to the traffic on Interstate 5. The Level Of Service, range and soil erosion potentials all contribute when choosing this area. The area is characterized by frequent ignitions that result in large, fast moving fires.

OBJECTIVES

- 1) A. Confine roadside ignition area.
- 2) B. Reduce roadside fire ignitions.
- 3) C. Reduce fire size potentials.

PRESCRIPTIONS

- 1) A. Establish roadside vegetation reduction projects in strategic areas.
B. Projects may include prescribed strip burning and disking of vegetation.
C. Emphasis needs to be on the area west of I-5, south of Canyon Road and south to Fresno County line.
- 2) A. Inventory the fire roads in the area and annually report on the status of them.
B. Establish firebreaks in strategic areas in order to reduce fire sizes.
C. Improve Laguna Seca Road from I-5 west to Langdon Canyon Road.
D. Improve Paul Negro Road from I-5 west to Langdon Canyon Road.

Target Area #7 – Battalion 7

AREA DESCRIPTION:

This target area #7 is in Battalion 7 and involves the Hwy 152 area north of San Luis Reservoir. Highway 152 experiences an average daily traffic flow of 24,300 vehicles (Cal-Trans 1999 Traffic Census). The area experiences similar factors as target area #6, frequent fires that are large, but not considered damaging to life or property and frequently drawing firefighting resources from other areas. Soil erosion, scenic values, Level Of Service and range values are significant in this area.

OBJECTIVES

- 1) Confine roadside ignition fires.
- 2) Reduce roadside fire ignitions.

PRESCRIPTIONS

- 1)
 - A. Establish roadside vegetation reduction projects.
 - B. Conduct surveillance if needed.
- 2)
 - A. Establish fire breaks in strategic areas.
 - B. Inventory existing fire roads and annually report on their condition.
 - C. Establish cooperative pre-fire projects with various land management agencies e.g.: State Parks and the wildlife refuges.

Discussion

The objectives and prescriptions previously discussed were designed to be general in direction. MMU staff will identify more specific prescription efforts throughout Fire Management Plan implementation. The battalion Fire Management Plans will discuss actual efforts and activities performed annually.

All schools in MMU's SRA will receive fire prevention education attention. This attention will be in the form of interpretive programs and material disbursement. This effort is included as a more detailed prescription within the target areas and will be recorded by fire prevention staff.

MMU continues to revere cooperative pre-fire management projects as valuable events. MMU staff will strive to increase the quantity and quality of interagency pre-fire management projects in order to improve the protection of shared risks.

Stakeholder cooperative fuel management projects continue to increase in frequency within MMU. (See Figure 11) MMU staff participation has been instrumental in these processes. MMU staff will continue to support these cooperative projects and provide technical and, administrative and political assistance as necessary.

The target area selection is essential to implementing the California Fire Management Plan and MMU Fire Management Plan. The results from the prefire management efforts within the target areas will include fuel breaks around communities, general fuel reduction projects, an increased public awareness of the need for prefire management, increased community participation with pre-fire activities, and more successful initial attacks on fire. Not listed are the efforts, activities and awareness that are attracted to these communities resulting from collaborative efforts. The benefits snowball and increase the momentum of prefire management. The goal of MMU staff is to utilize the MMU Fire Management Plan as a tool and a guide to maintain the intensity of pre-fire management within MMU.

VI. Stakeholder and Cooperative Fuel Management Projects

SWIFT

“Cooperatively planning and implementing a strategic fire defense system designed to reduce the threat of loss to life, property, and resources in the Southern Tuolumne & Northern Mariposa County urban-wildland interface”.

Over 11,062 acres of fuel treatment have been completed or is under contract to complete since the inception of SWIFT in March of 1999. The South West Inter-Face Team has continued to identify the best wildland fire protection formula for the 132,000 acre project area.

PAST ACCOMPLISHMENTS

Fuel breaks Construction:	40.5 miles
Mechanical Shredding:	5,985 acres
Prescribed Burning:	5,063 acres
Other Treatments:	
Animal Grazing	
Piling to Burn	
Hand Clearing	
Thinning/Other	1,857 acres
<hr/>	
TOTALS:	40.5 miles 12,905 acres

MARIPOSA COUNTY FIRE SAFE COUNCIL

The Mariposa Fire Safe Council (MFSC) helps get the word out to the homeowners of Mariposa communities on how to minimize the risk of fire in the Urban Interface. The MFSC has continued to focus on helping communities such as Midpines, Lush Meadows, Ponderosa Basin, Hunters Valley, and Greeley Hill with projects like clearing brush, chipping, performing free home inspections and educating the residents about fire safety.

As a non-profit organization, the MFSC is funded by grants. Recently, a grant has been approved by the Mariposa County Board of Supervisors for Title III funds in the amount of \$80,000 over the next two years. This grant will be used to conduct a community education and chipping project. Each month a MFSC representative and a contracted crew with chipper dump truck will present a three-day fire safe education project in a different community. Weather permitting they will be able to reach nine to ten communities the first year allowing for re-visits in year two.

The MFSC also applied for and received a grant from the Sierra National Forest for \$96,000 to conduct a fuel reduction project around homes on SRA lands adjacent to SNF lands in the Mariposa Pines area. This project will enhance a fuel break project the SNF is working on to protect the community of Mariposa Pines.

An additional \$96,000 grant has been approved to complete phase two of a project in Greeley Hill, which provides a planning and education project adjacent to BLM lands within the area.

EASTERN MADERA COUNTY FIRE SAFE COUNCIL

The Eastern Madera County Fire Safe Council (EMCFSC) has applied for and received several grants. One such grant from the National Fire Management Plan, for \$50,700 funds a chipping project in the North Fork area. The Madera County Board of Supervisors approved Title II funds to purchase a chipper for this project and authorized the EMCFSC to utilize the old North Fork Mill site to store and chip materials. A private contractor transports the chips to be used at a local biomass plant. A portion of the material will be used as compost and given away to the public. Larger materials such as limbs and trunks are reserved for the Economic Community Council. They get individuals constructing furniture and other items to help improve the local economy. This project has been successful.

A grant for \$156,000 has been applied for and received through the Community Fire Assistance Program to expand fuel reduction projects in the North Fork and the Oakhurst areas.

Another grant was applied for and received through BLM for \$138,500 to provide fire safe education, planning and coordination and implementation for the residents of Eastern Madera County.

The EMCFSC also administers three Title II and Title III grants for Madera County that provides funding for employment for at risk youths. The youths learn resource conservation practices, forestry, and provide fire safety services. The youths

form crews and work in the community and with the EMCFSC and the Coarsegold Resource Conservation District. They participate in doing fuel management projects, campground maintenance and assist senior citizens with fuel reduction needs in residential areas.

The EMCFSC has also received a grant for \$360,000 to construct a shaded fuel break along Potter's Ridge in Oakhurst. This area is on the western side of the Oakhurst basin and has a history of large fires that have historically threatened the community of Oakhurst.

NORTH FORK MONO RANCHERIA

The North Fork Mono Rancheria has received a grant in the amount of \$85,000 from BLM for an education and multiple fuel reduction projects on tribal lands. This project is currently underway and the fuel reduction program has been implemented in and around the town of North Fork. The Rancheria also works with the EMCFSC to reduce fuels in other areas of North Fork.

VII. Institutional and Other Issues

1). The current spatial data being supplied for GIS projects needs to be validated and processed. The raw data as it is received is not accurate due to the wide range of data provided statewide. The Prefire Engineer is working on validating this data with the assistance of a part time GIS Tech trainee when available. With the introduction of a new GIS based dispatch system, it is imperative the data be maintained in an accurate form. A new GIS position will need to be established to insure accuracy of data received, and to provide maintenance and upkeep of this information.

VIII. Appendix

STAKEHOLDERS LIST

Residents of Madera, Mariposa and Merced Counties
U.S. Forest Service, Sierra National Forest
U.S. Forest Service, Stanislaus National Forest
Bureau of Land Management, Folsom District
National Resource Conservation Service
Madera County Fire Department
Merced County Fire Department
Coarsegold Resource Conservation District
Mariposa Resource Conservation District
Madera County Road Department
Madera County Environmental Health
California Department of Fish and Game
Pacific Gas and Electric
Mariposa County Fire Safe Council
Eastern Madera County Fire Safe Council
North Fork Mono Rancheria
Picayune Rancheria of the Chukchansi Indians
The Ponderosa Acres Homeowner Group
The Lushmeadows Homeowners Group
Greeley Hill Fire Safe Group
Mariposa County Fire Department
Mariposa County Road Department
Mariposa County Human Services Agency
Mariposa County Office of Emergency Services
Central Sierra Watershed Committee
California Highway Patrol
Oakhurst Action Council
California Department of Transportation
National Park Service
Yosemite/Sequoia Resource, Conservation &
Development Council
SWIFT Southwest Inter-Face Team

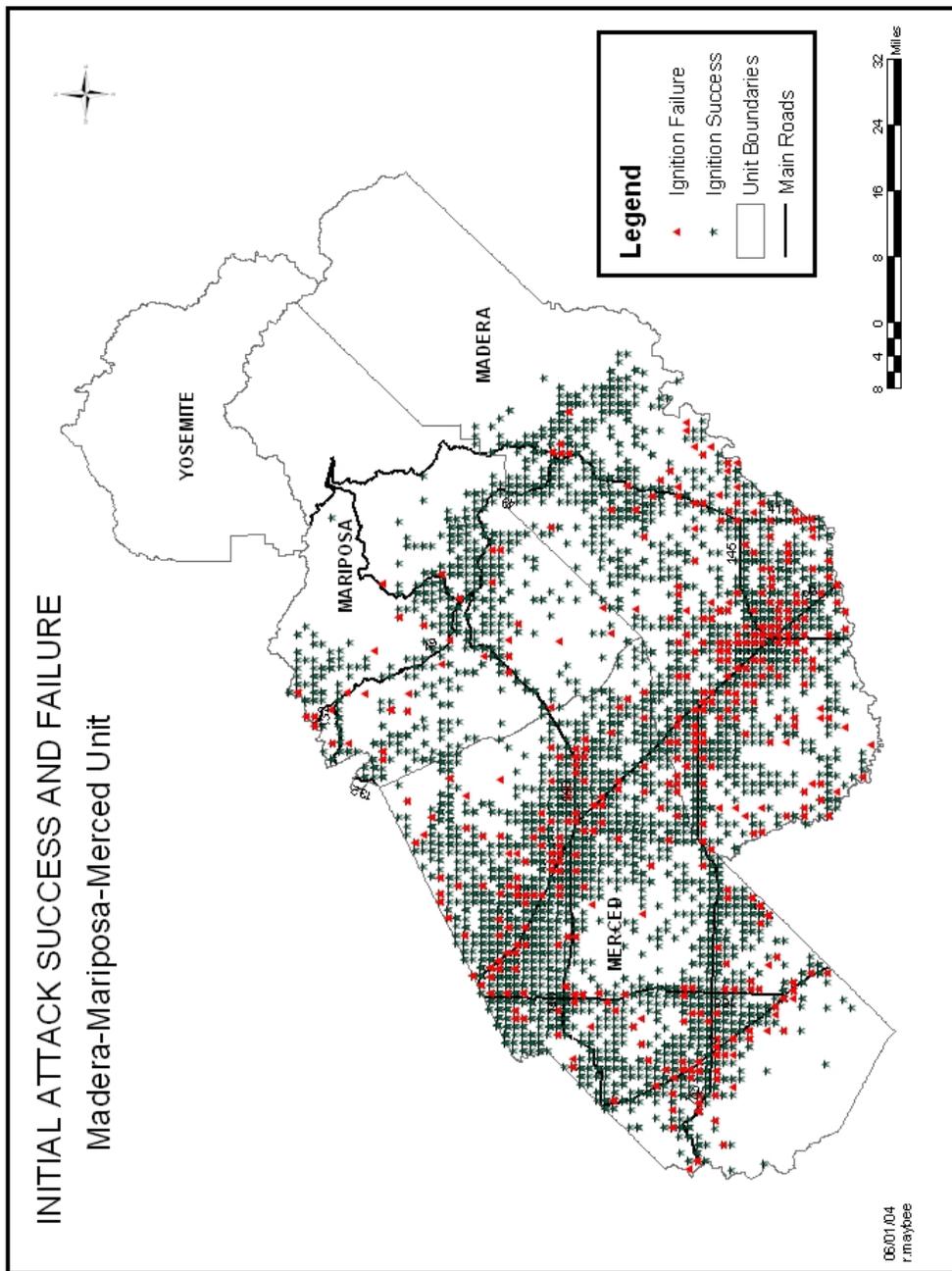
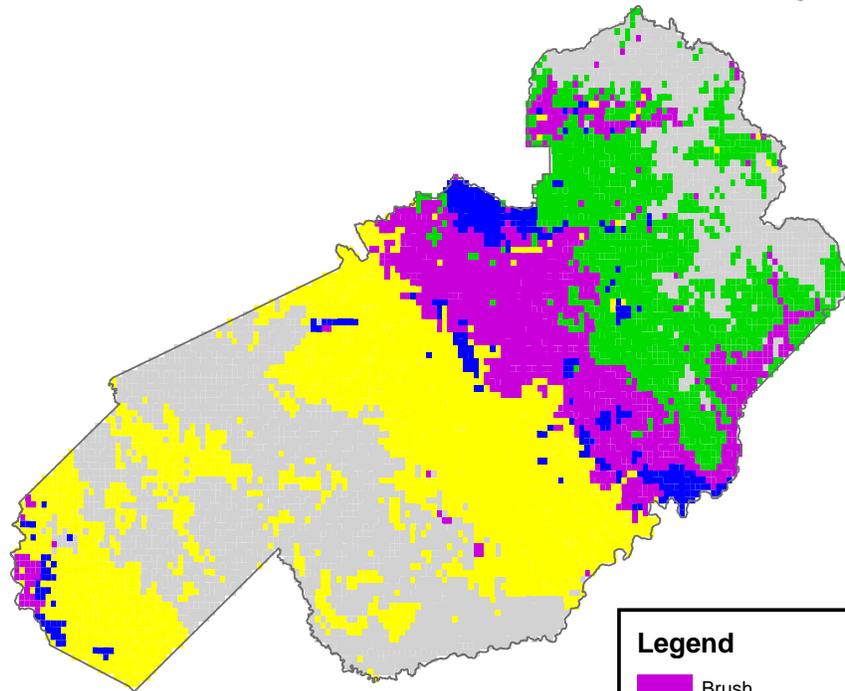


Figure 2 Level of Service

MADERA-MARIPOSA-MERCED FUEL PLANNING BELT



0 12.5 25 50 Miles

Legend

- Brush
- Grass
- Interior Conifer
- Woodland
- Barren/Rock/Other
- Desert
- Coastal Conifer

7/03 RPM

Figure 3 Planning Belts

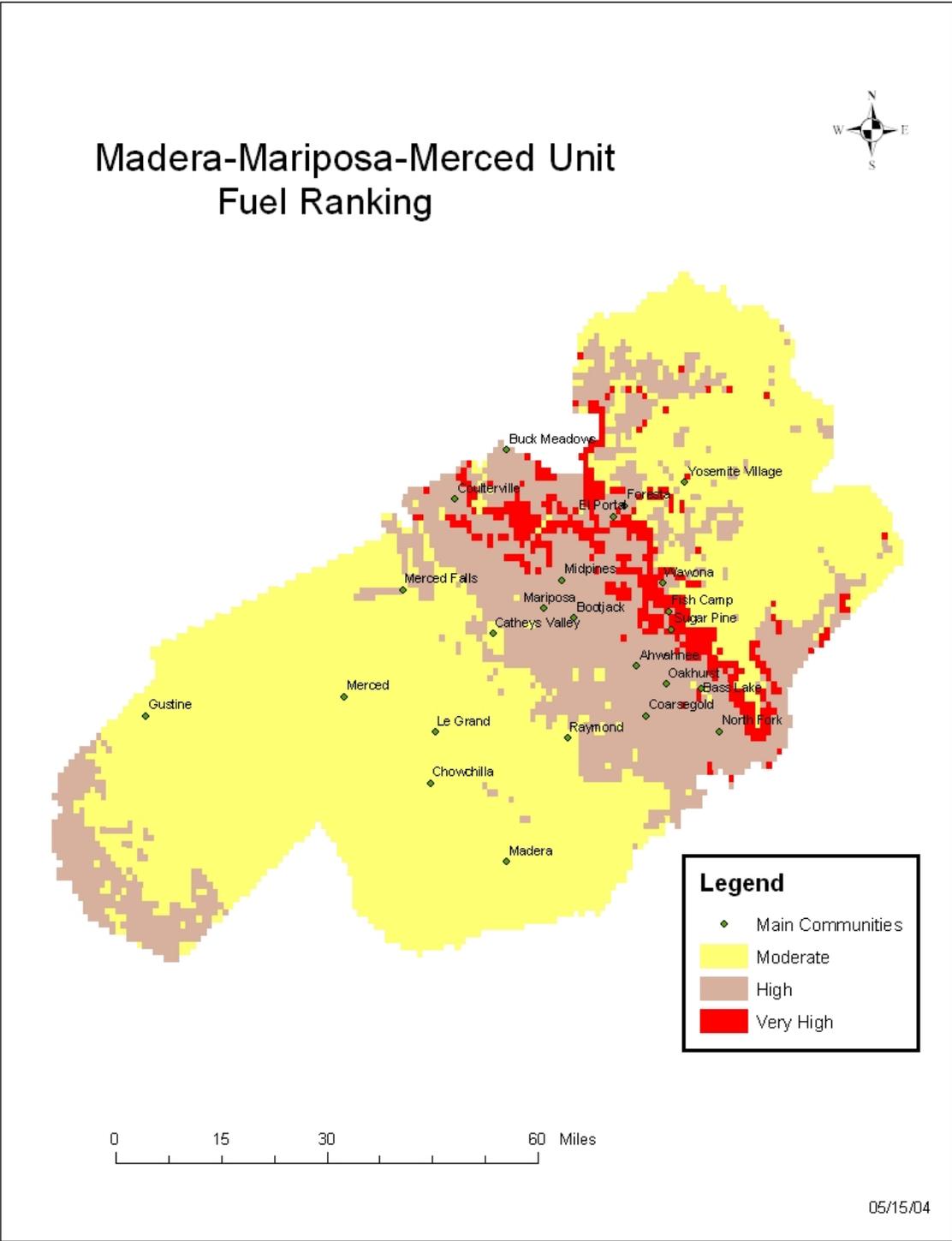


Figure 4 Fuel Ranking

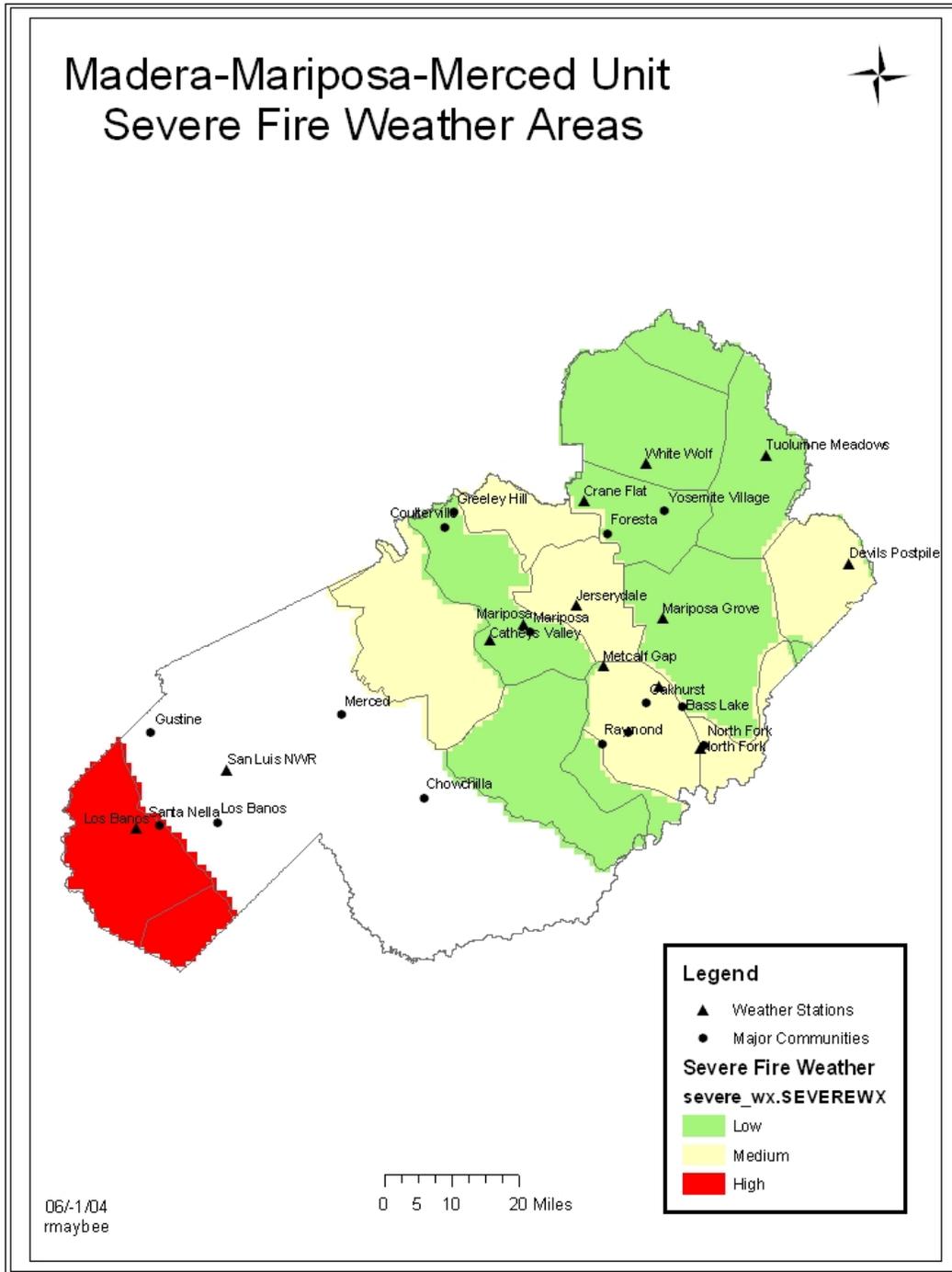


Figure 5 Fire Weather

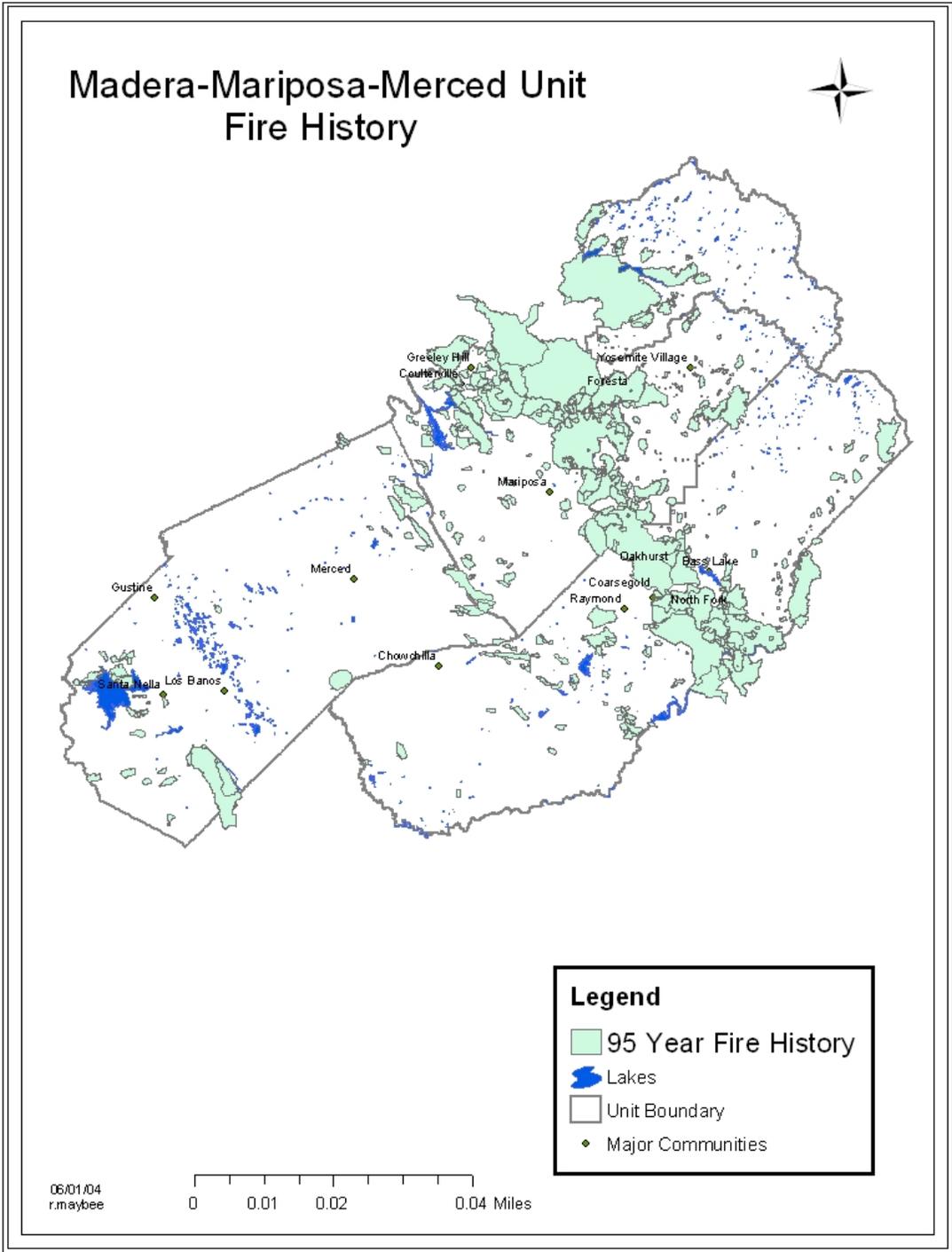


Figure 6 95 Year Fire History

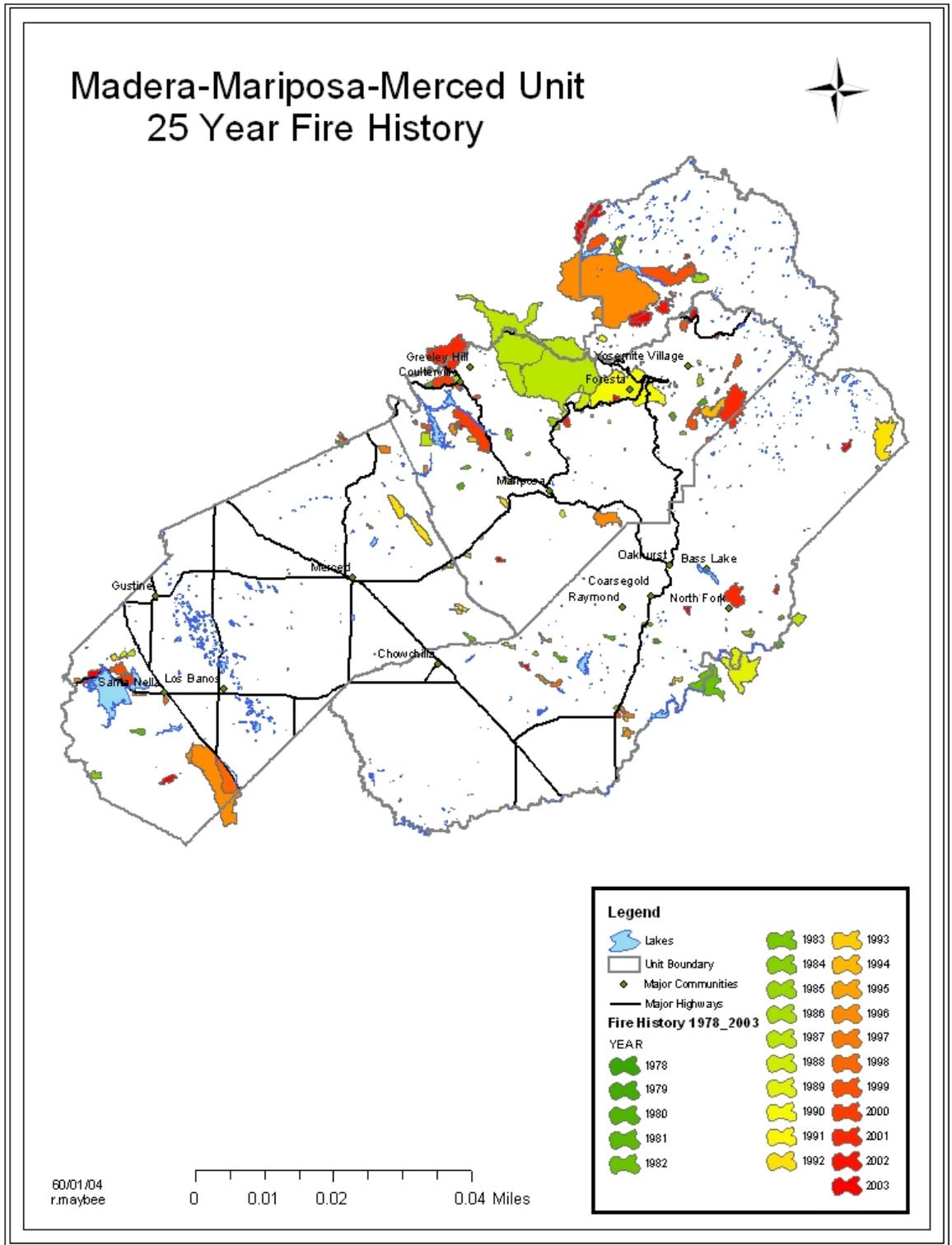


Figure 7 25 Year Fire History

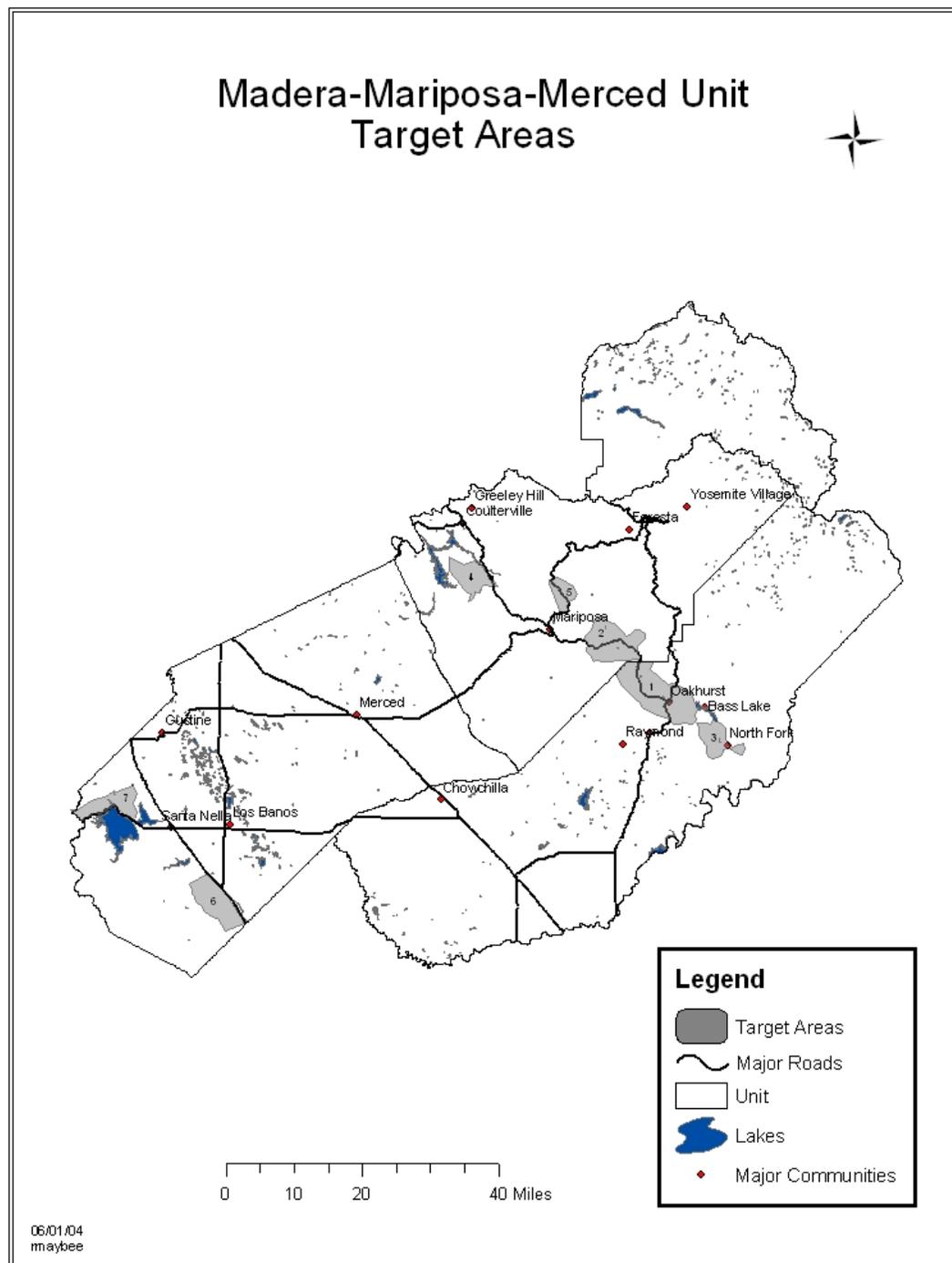


Figure 8 Target Areas



Figure 9 SWIFT Project Map