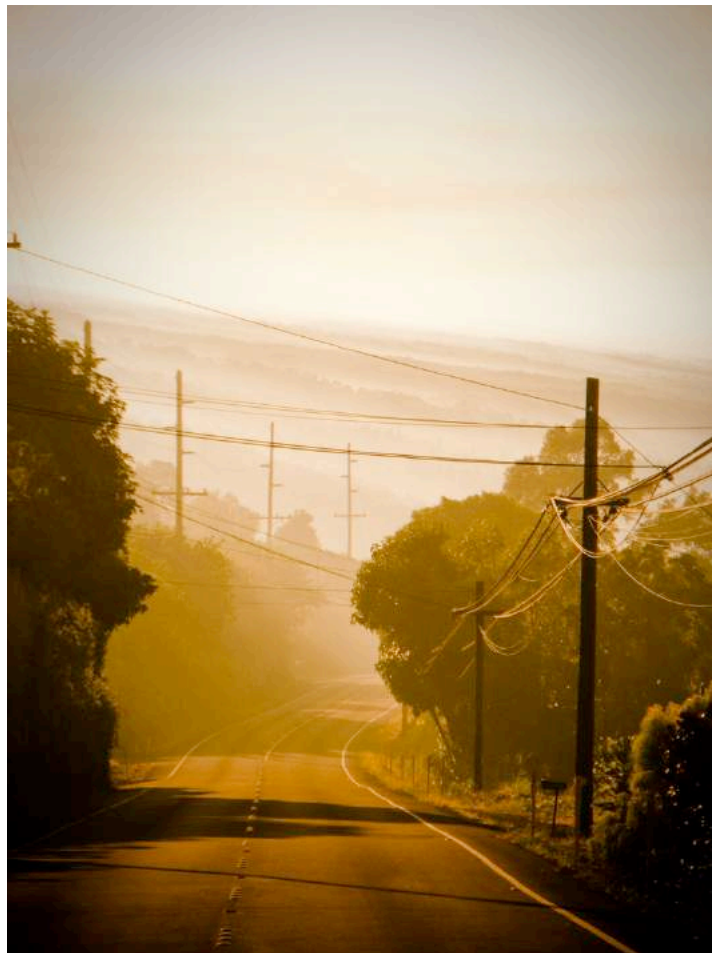


# SOUTH KONA COMMUNITY WILDFIRE PROTECTION PLAN

Sponsored by the Hawaii Wildfire Management Organization  
a 501(c)(3) nonprofit organization



Smoke from 2009 Kealakekua upland fire spread throughout South Kona.  
*Photo Courtesy: Jesse Acosta, DLNR-DOFAW*

**March 2010**

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Hawaii Wildfire Management Organization

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## INTRODUCTION

### Goals and Objectives of the South Kona CWPP

This Community Wildfire Protection Plan (CWPP) was developed by the Hawaii Wildfire Management Organization (HWMO) with guidance and support from South Kona community members, decision makers, and local/state agencies concerned about fire issues in South Kona. The Hawai'i County Fire Department, the Hawai'i County Civil Defense, the National Park Service, and the Hawaii Department of Land and Natural Resources were primary partners in developing this plan.

The goals and objectives of this plan follow the intent and requirements of the *Healthy Forests Restoration Act (HFRA) – HR 1904*, which describes a CWPP as a fire mitigation and planning tool for an at-risk community that:

- A) Is developed within the context of the collaborative agreements and the guidance established by the Wildland Fire Leadership Council and agreed to by the applicable local government, local fire department, and State Agency responsible for forest management, in consultation with interested parties and the Federal land management agencies managing land in the vicinity of the at-risk community.
- B) Identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment on Federal and non-Federal land that will protect one or more at-risk communities and essential infrastructure.
- C) Recommends measures to reduce structural ignitability throughout the at-risk community.<sup>i</sup>

This plan addresses elements of fire protection, hazard assessment, wildfire mitigation priorities, and community outreach and education. The process used to develop this plan engaged a diversity of agencies and individuals concerned with the at-risk area, following the guidelines and requirements of federal grants programs such as the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation program and the National Fire Plan (NFP).

### Planning Area Boundaries

The South Kona CWPP covers an area approximate to the Hawaii County district boundaries of South Kona, stretching for nearly 30 miles between the North Kona district in the north and the Ka'u district in the south. The planning area is bordered on the west by the coastline and on the east by the higher elevations of Hualalai and Mauna Loa where the density of fuels is less. The CWPP planning boundaries are the same as the wildland-urban interface (WUI) at-risk areas, which include surrounding lands to ensure adequate protection of WUI areas. Parts of the South Kona CWPP boundaries coincide with boundaries of other CWPP-covered areas: Hawaii Volcanoes National Park and Ocean View, Hawaii. See map below for planning area boundaries.

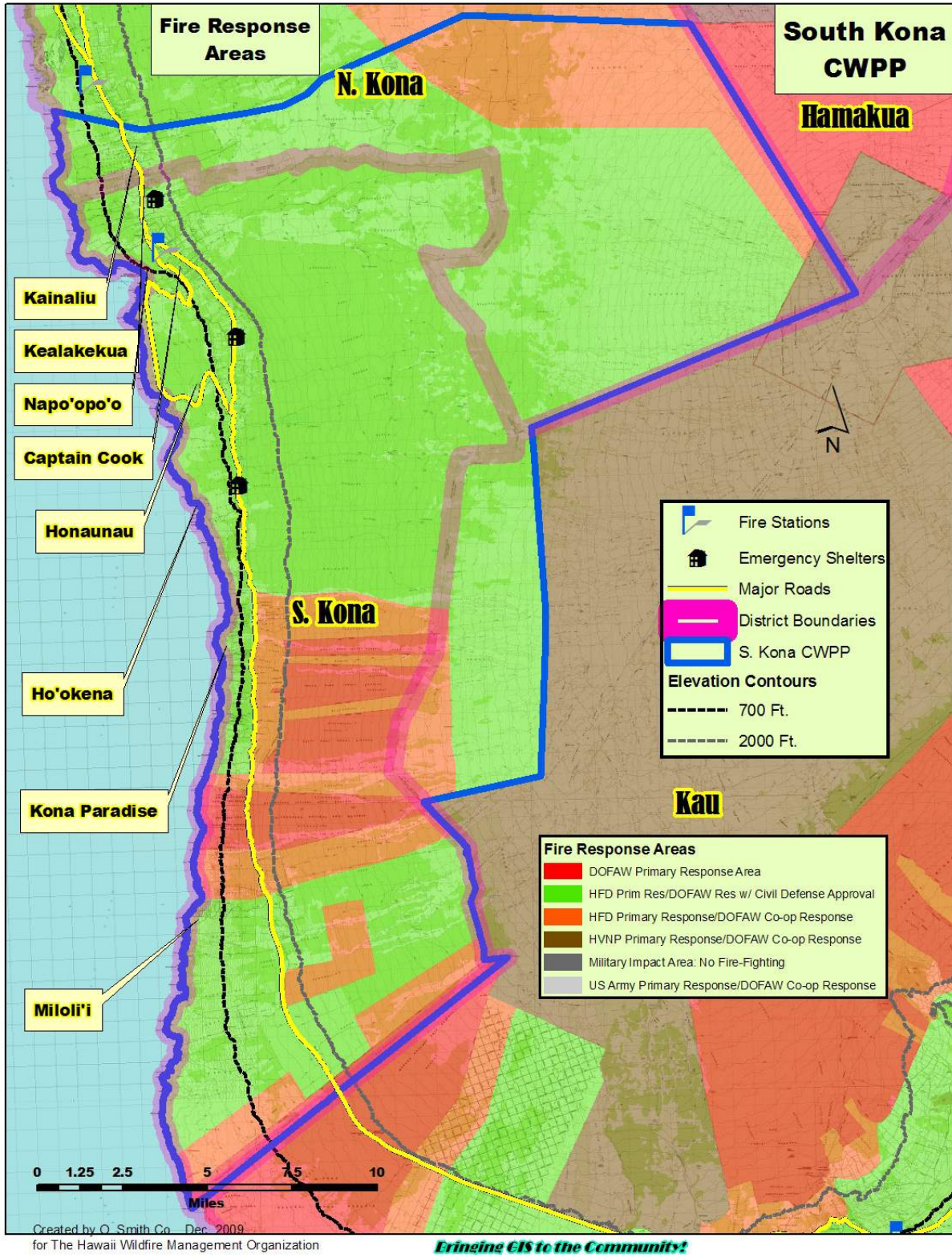


Figure 1. CWPP Boundary Map.

## BACKGROUND

### South Kona Community and Landscape

South Kona stretches for approximately 30 miles between Kailua-Kona and Ka'u, on the leeward side of Hawaii Island. The South Kona area is home to almost 11,000 people (2000 U.S. Census Bureau) and includes Kealahou, Captain Cook, Honaunau, Napo'opo'o, Ke'ei, Miloli'i, Ho'okena, Papa Bay, Kona Paradise, and other smaller communities and farm areas. Steep slopes and rough terrain dominate most of South Kona, with residential areas, businesses, community infrastructure, cultural resources, and farms spread throughout the district and ranging from sea level to upland areas. The region is primarily rural with low-density development. Over half of these residents depend on rain catchment and hauling or delivery of potable water.

### *Environment and Natural Resources<sup>ii</sup>*

South Kona is situated along the western slopes of both Hualalai and Mauna Loa volcanoes, and is geologically young. Elevations range from sea level to over 13,000 feet at the top of Mauna Loa. In South Kona, the land is particularly steep. Individual sections, some fairly large in area, have slopes greater than 10%,

The South Kona region is unique due to the wide range of climatic conditions over a relatively small distance, providing diverse physical environments that vary considerably between the coastline and high elevations. Lava fields with mixed shrubs and grasses characterize the low-lying coastal areas. The prime agricultural belt lies between 700 – 2,000 ft elevation. Upland forests and high elevation grasslands are found above Mamalahoa Highway.

South Kona is protected from the prevailing northeast trade winds due to its position on the leeward slopes of Mauna Loa and Hualalai. It is more greatly affected by diurnal thermal winds, which are experienced as an alternating land-sea system of air circulation resulting from the differential heating of the land and ocean. On-shore breezes prevail in the morning and early afternoon, while offshore breezes develop in the late afternoon and evening. The average rainfall varies from less than 30 inches per year along the coast to more than 100 inches on the slopes around and directly above the prime agricultural belt (700-2,000 ft), decreasing dramatically to 50 inches at the 5,000 ft elevation level.

Lower elevation temperatures range between 70 F in the winter to the 90 F in the summer. Inland higher elevation areas experience cooler trends than the coast, with temperatures decreasing with elevation.

Differences in climate, topography, and soils have resulted in unique natural ecosystems. The classification of terrestrial ecosystems is based on the elevation at which they occur. Before human settlement the North and South Kona districts were made up of the following ecosystems:

- Subalpine forest, woodland, and shrub land
- Montane dry and mesic forest and woodland
- Wet forest and woodland
- Lowland and dry and mesic forest, woodland, and shrub land
- Lowland dry shrub land and grassland

In the past several hundred years of human habitation, pristine native ecosystems have diminished. Human activity and introduction of non-native plants and animals have displaced many of the historic plant and animal communities. Today, invasive grasses and shrubs and human-caused fire starts contribute to a cycle of hazardous wildfire conditions and increased post-burn conversion to non-native fire-promoting species. Despite the widespread alteration of native ecosystems, a few areas in South Kona remain as habitat for rare and endangered species and are protected. Upland areas are less disturbed and contain abundant 'ohia and koa forests.

#### *Natural Water Resources*

Water resources in the Kona area are associated with groundwater reserves. The North and South Kona districts overlie the Hualalai and Southwest Mauna Loa Aquifers. There are no perennial streams in the Kona area. However, several well defined drainage channels or watercourses are found within the high rainfall areas situated on the slopes of Mauna Loa and Hualalai. Kona streams are significantly affected by the seasonal rainfall pattern. There are multiple watersheds and ahupua'a within the South Kona District.

Ho'okena is the southernmost region of South Kona served by municipal water. Residents south of Ho'okena depend on rain catchment and hauling for potable water.

#### *Population and Land Use*

South Kona has limited slow growth, with greater population stability and a higher rate of homeownership than its neighbor district of North Kona. According to the 2000 U.S. Census Bureau, moderate growth in both population and housing construction has occurred in the district of South Kona.

Seventy-six percent of South Kona land use is designated as Agricultural, 8.3 % is zoned Open, and 0.25 % is zoned for single-family residence. There is no land set aside specifically for industrial uses in South Kona, and only 15 acres are zoned as resort. Many of the industrial activities are located on Agricultural zoned lands and approved through the issuance of Special Permits. With the majority of land use being agricultural, many residents are farmers growing coffee, macadamia nuts, avocado, and a variety of fruits and vegetables. Cattle ranching is also a significant economic activity, with several active ranches in the region. The region has several parks and natural area reserves managed by the State and The Nature Conservancy.

South Kona is home to the Kona Coffee Belt, located above Kealahou. The coffee belt is a narrow belt of land approximately 2 miles wide running parallel to the Kona coast from 700 feet elevation to 2,000-foot elevation. South Kona produces much of the island's coffee crop. There are approximately 650 farms cultivating coffee on the western slopes of Mauna Loa and Hualalai mountains in the Kona district. Approximately, 3,500 acres of land is utilized for Kona coffee farming, producing about 3.8 million pounds a year, valued at about \$14 million (County of Hawaii, 2006).

Macadamia nuts are also an important agricultural product to South Kona. The district is home to MacFarms of Hawaii and Kapua Orchards, the primary producers of macadamia nuts. During the 2003 and 2004 growing season, Hawaii produced 53 million pounds of macadamia nuts with

a significant amount coming from South Kona (Kona-Kohala Chamber of Commerce, 2005). Other agricultural activities such as fruits, plants and flowers, and specialty and diversified food crops are also expanding the agricultural base in Kona.

Additional South Kona activities include food packing and processing, and ancillary agricultural services. Other service related industrial uses such as warehousing, garages and auto body shops are located in clusters along Mamalahoa Highway. Because of its topographic condition, however, level land necessary for development in South Kona is limited in the mauka (upland) areas.

### **Wildfire History in South Kona**

Steep slopes, rough terrain, and a prevalence of fire-promoting fuels characterize the South Kona landscape. This, coupled with warm weather, recurring drought conditions, and a history of human-caused fire starts puts South Kona at risk of wildfire. The area is extremely isolated and the closest water source can be up to 20 miles away. Catchment systems are the only source of water between Hookeena and Waiohinu in the Ka'u district. The distances to water resources and the high cost of hauled water are problematic for residents, business owners, and farmers, and hinder fire suppression capabilities in the area.

Local fire fighting agency records document numerous fire starts along the main highway that spread through unmanaged fuels in the untended lands along the road and between homes. This is a fire issue because houses tend to be spread out, allowing significant fire spread through the areas in between roads and buildings. Structural fires often occur in old coffee plantation homes from candles and deteriorating home electrical components, also spreading through the patchwork of unmanaged vegetation. While the bulk of wildfires begin in the wildland-urban interface (WUI) areas, occasional but devastating fires occur in the upland forested and grassland regions. These fires threaten nearby community infrastructure, neighborhoods, grazing lands, and valuable native flora and fauna.

South Kona was recently reminded that upland wildfire is a significant threat. It took weeks for firefighters to extinguish the 1800 acre wildfire which began at Kealakekua Ranch on December 27, 2009. Grasses ignited by lightning were fueled by mature 'ohi'a and koa trees, hard woods which can burn for weeks. These long burning fuels and rhizomous



**Photo 1. 2009-2010 Upland fire in South Kona. Photo Courtesy: Jody Fergerstrom.**

grasses that can smolder and carry fire underground made the fire extremely challenging to put out. The rugged terrain at the 4,400-foot elevation where the fire broke out, along with lack of access to water, abundant fuel sources, dry conditions, and warm weather causing smoldering to reignite all combined to create difficult and hazardous conditions for the dozens of firefighter who worked 24-hour shifts to battle the blaze and protect the community. Smoke from the fire, trapped by Kona's temperature inversion layer, created health hazards for fire fighters and the entire South Kona

community.

A fire history map of South Kona was created that documents Hawaii County Fire Department's response to fires over 5 acres between January 1998 and January 2010. Records of all County response fires since 1998 in South Kona can be found in the appendix. Additional upland fires have taken place on private lands, with significant community-wide effects. See the fire history map below. Note the high frequency of fires near roads and neighborhoods on the WUI boundaries.



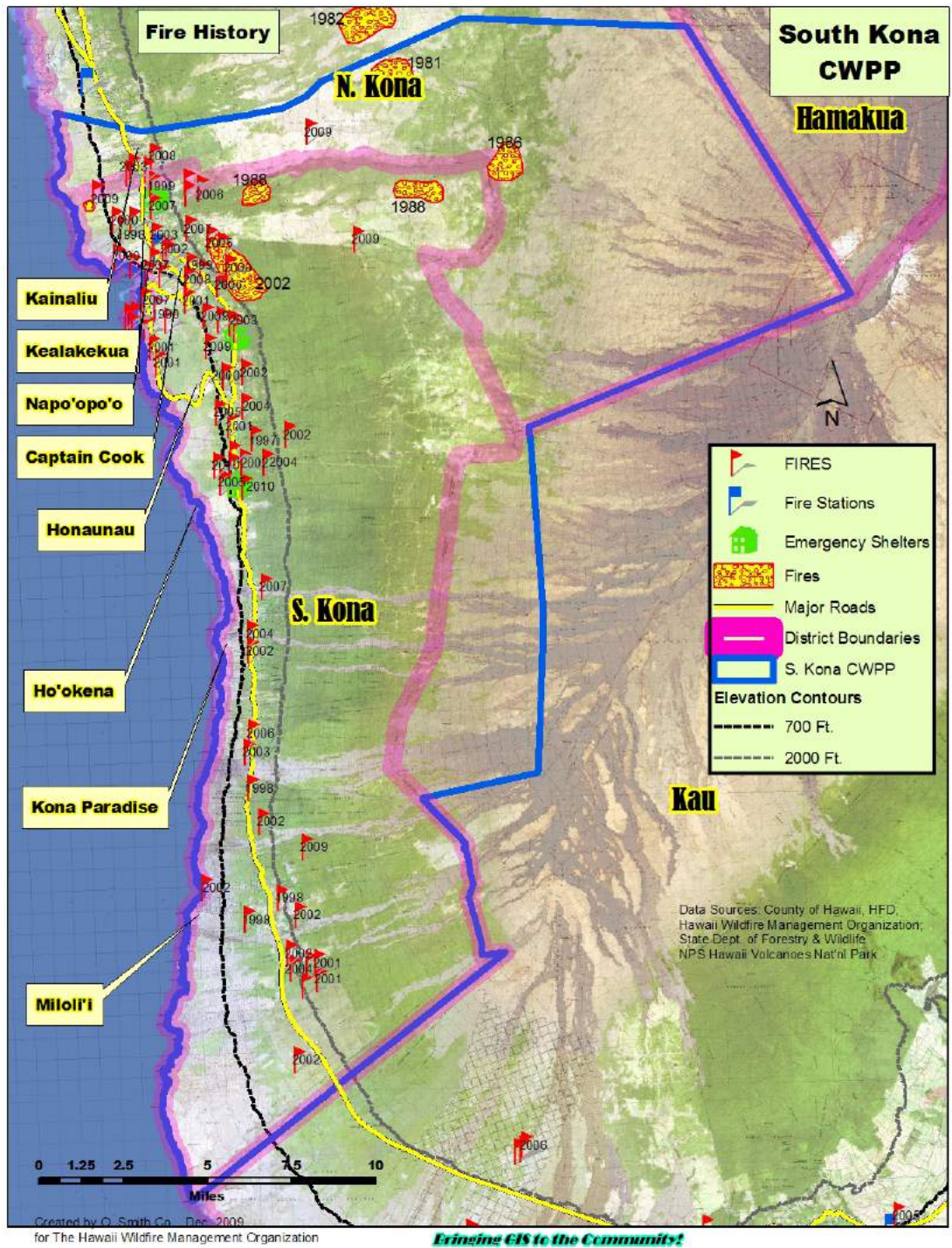


Figure 2. Fire History Map.

## EMERGENCY MANAGEMENT

### **Fire Suppression Capabilities and Resources<sup>iii</sup>**

Initial response to most fire, medical, and associated emergencies is the responsibility of the Hawaii County Fire Department. State Department of Land and Natural Resources (DLNR), Federal, and landowner crews provide additional wildland fire fighting assistance.

Although the County Fire Department has the following equipment, its resources are spread across the entire island of Hawai'i. All of the equipment is not available for use in one specific district at one time due to geographic distance.

For wildfire and rural use, the County Fire Department is equipped with ten water tenders deployed around the island, which have a total capacity of 13,850 gallons. In addition, they have acquired two special "brush" trucks for wildfire use. They operate a rescue helicopter and an ambulance helicopter that can drop water when necessary. When more air support is needed, small and medium size private helicopters are hired. The National Guard maintains five large helicopters (Blackhawks) in Hilo, which have water bucket capabilities and have occasionally been hired by the State. In addition to DLNR support, federal firefighters may be available from their station in the National Parks and the Army's Pohakuloa Training Area.

### **Training Resources and Needs**

Recommendations for additional training for firefighters include:

- Basic Wildland Fire Training and Refresher Courses
- Initial Attack Incident Command
- Basic Fire Behavior
- Helicopter Operations
- Strategy and Tactics (S-336)
- Basic and intermediate Incident Command System (ICS)
- Wildland Fire Chainsaws (S-212)

### **Emergency Management Documents and Plans**

The CWPP is non-regulatory and cooperative in nature. The plan provides (1) a foundation for increased communication, coordination and collaboration among agencies and the public, (2) identification and prioritization of areas for hazardous fuel reduction projects and wildfire mitigation actions, and (3) assistance meeting federal and state planning requirements and qualifying for assistance programs<sup>iv</sup>.

The CWPP works in conjunction with other County and State plans and programs including but not limited to:

#### County of Hawaii:

Kona Community Development Plan.<sup>1</sup>

Hawaii County Multi-Hazard Mitigation Plan.<sup>2</sup>

County of Hawaii Drought Mitigation Strategies<sup>v</sup>

Ka'u to South Kona Water Master Plan<sup>vi</sup>

State of Hawaii:

State Drought Plan and the County Drought Mitigation Strategies<sup>vii</sup>

State of Hawaii Multi-Hazard Mitigation Plan<sup>viii</sup>

### **Multiple-Agency Agreements**

The federal, state, and local fire agencies of the Big Island have organized into the Big Island Wildfire Coordinating Group (BIWCG). Members include:

- National Park Service
- U.S. Fish and Wildlife Service
- U.S. Army,
- Hawai`i County Civil Defense
- Hawai`i Fire Department
- Department of Transportation - Airports Division, Hawaii District.
- Hawaii Department of Land and Natural Resources (DLNR) – Division of Forestry and Wildlife

BIWCG was established to further inter-agency cooperation, communications and coordination, and to implement directions and standards for incident management activities. BIWCG coordinates the programs of the participating wildland fire agencies on the big island of Hawai`i and provides a forum for leadership, cooperation and the exchange of information<sup>ix</sup>. It also improves procedures to rapidly provide the most effective response to wildfires in the island. In coordination with Civil Defense, drought and other fire-hazard conditions are constantly monitored and actions such as burning bans and closures are instituted when needed. The public is informed of these restrictions by radio announcements and newspaper notices.<sup>2</sup>

The agencies represented in BIWCG have participated in the South Kona CWPP as direct partners and/or as Board members of the Hawaii Wildfire Management Organization.

### **Evacuation Protocols and Needs**

Evacuation protocols for neighborhoods and areas in South Kona have been determined for natural hazards such as tsunamis, and can be found in the documents listed above. However, fire safety zones for all neighborhoods and areas of South Kona are yet to be determined, and are a priority action determined by the community as part of this CWPP process.

### **Next Steps- Needs and Recommendations**

Priority next steps recommended by the involved agencies regarding wildfire are:

- Increase fire fighting resources
- Develop a Type III Team for multi-agency wildfire/fire management
- Develop interagency training program
- Implement an interagency Fire Danger Rating System

## PLANNING PROCESS

### CWPP Process and Methods

The process of developing a CWPP helps to clarify and refine priorities for the protection of life, property, and critical infrastructure in the South Kona wildland-urban interface areas. Local residents, landowners, fire suppression agencies, and community leaders have participated in valuable discussions regarding wildfire history, resources at risk, areas of concern, and priority mitigation actions.

The methods used to create this CWPP followed the guidelines established for the HFRA, which requires the following actions during the planning process:

- Step 1- Convene Decision Makers
- Step 2- Involve Federal Agencies
- Step 3a- Involve State and Local Agencies
- Step 3b- Engage Interested parties

### Decision Makers

The decision-makers for this Community Wildfire Protection Plan are represented in the following table:

Requirement	Agency or Organization	Name
Local Fire Chief	Hawai'i County Fire Department	Darryl Oliveira
Local/County Government	Hawai'i County Civil Defense Department	Quince Mento
State Forestry Agency	Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife	Paul Conry Wayne Ching

### Federal Agencies

The representatives of the federal agencies involved in managing the land and fires in the vicinity of the South Kona area are:

Agency	Representative(s)
National Park Service	Joe Molhoek, Fire Management Officer
US Army	Eric Moller, USAG-HI, Deputy Fire Chief
US Fish and Wildlife Service	Dawn Greenlee, Fish and Wildlife Biologist

### State and Local Agencies

The representatives of the state/local agencies that have jurisdictional responsibilities in the vicinity of the South Kona areas are:

Agency	Representative(s)
Hawai'i County Fire Department	Darryl Oliveira, Fire Chief Dennis Iyo, Battalion Chief Marshall Luke, Battalion Chief Mike Tomich, FEO
Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife	Wayne Ching, State Protection Forester Roger Imoto, Hawaii Island Forestry & Wildlife Manager Jay Hatayama, Protection Forester

### Interested Parties

The parties from our community that have shown interest in forest/fire management and have been involved in this CWPP are:

Interested Parties	Affiliation (if any)
Kona Community Development Plan, Action Committee	Hawaii County
Large Landowners	Kamehameha Schools, Hokukano and Kealakeua Ranches, The Nature Conservancy TNC
Private Citizens	
Local Associations and Organizations	Hawaii Wildfire Management Organization, Big Island Wildfire Coordinating Group
Public At Large	

Meetings were held with agency representatives, community members, and interested parties at:

- Hawaii Wildfire Management Organization Office in Kamuela, Hawaii on September 3, 2009, October 1, 2009, January 7, 2010, February 4, 2010, and March 4, 2010.
- Keauhou Fire Station on February 19, 2010.
- Hawaii County Fire Department Dispatch Office in Hilo, Hawaii on February 23, 2010.
- County Planning Department Community Meeting Room on February 24, 2010.
- Konawaena Elementary School on March 11, 2010.



**Photo 2.** HWMO, local firefighters, and other interested parties review fire history map and discuss local wildfire issues at the Keauhou Fire Station. *Photo Courtesy: HWMO.*



**Photo 3.** Miles Nakahara of HWMO, explains the CWPP process to South Kona residents and collects public input. *Photo Courtesy: HWMO.*

Public Service announcements regarding wildfire risk and the CWPP were published in the West Hawaii Today newspaper and Hawaii 24/7 news website. Public comments were accepted beginning February 4, 2010.

Valuable public input regarding community concerns and priority actions was acquired on the March 11, 2010 meeting at Konawaena Elementary School. The meeting was attended by Community Development Plan committee members, homeowners association members, County Fire Department representatives, local firefighters, and South Kona area residents. Attendees of the meeting enthusiastically supported the CWPP plan and its objectives, noting that South Kona residents are very concerned with local wildfire issues and eager to begin reducing the risk of wildfire.

HWMO intends to post the plan on its website for public use.

# WILDFIRE RISK ASSESSMENT

## Purpose and Methods

The purpose of the community risk assessment is to:

1. Provide site-specific information to the community to promote wildfire awareness;
2. Help identify and prioritize areas for treatment; and
3. Determine the highest priority uses for available financial and human resources.

The methods for the community wildfire risk assessment followed the guidelines established for the HFRA, which requires the following actions:

- Step 4- Establish a Community Base Map
- Step 5a- Develop a Community Risk Assessment
- Step 5b- Identify Overall Community Priorities

The wildfire risk assessment follows the guidelines and requirements of the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation program and the National Fire Plan (NFP).

## Community Base Map

Using GIS technology and local expertise, HWMO has developed a base map of the community and adjacent landscapes of interest. The map is a visual aid from which community members and agencies identified values and resources at risk in the South Kona Area.

After considering the location of the inhabited areas, the critical human infrastructure, the areas of community importance, and the risk of wildfire, the community identified a wildland-urban interface (WUI) zone around community assets.



**Photo 4. Local firefighters discuss hazards and fire history patterns revealed through mapping. Photo Courtesy: HWMO.**



**Photo 5. Smoke from upland fires spreads to lowland areas of South Kona via wind. Photo Courtesy: Jesse Acosta, DLNR-DOFAW.**

The community and local agencies determined that areas upslope from the major highway must be included in the CWPP boundaries. These upslope areas have access roads (multiple ignition points) and include older settlement areas, historical buildings, irreplaceable natural and cultural resources. Also, the smoke from fires in this upland area creates safety (visibility) and health

hazards because the prevailing winds move the smoke into the lower elevations. Wildfires in these higher elevations also create post-fire flooding and erosion conditions that threaten communities down slope. In many cases, fires 8-15 miles away from the main highway have put community resources at risk, as witnessed in the recent South Kona fires (2009 Hokukeno and Kealakekua fires). See Community Base Map below.

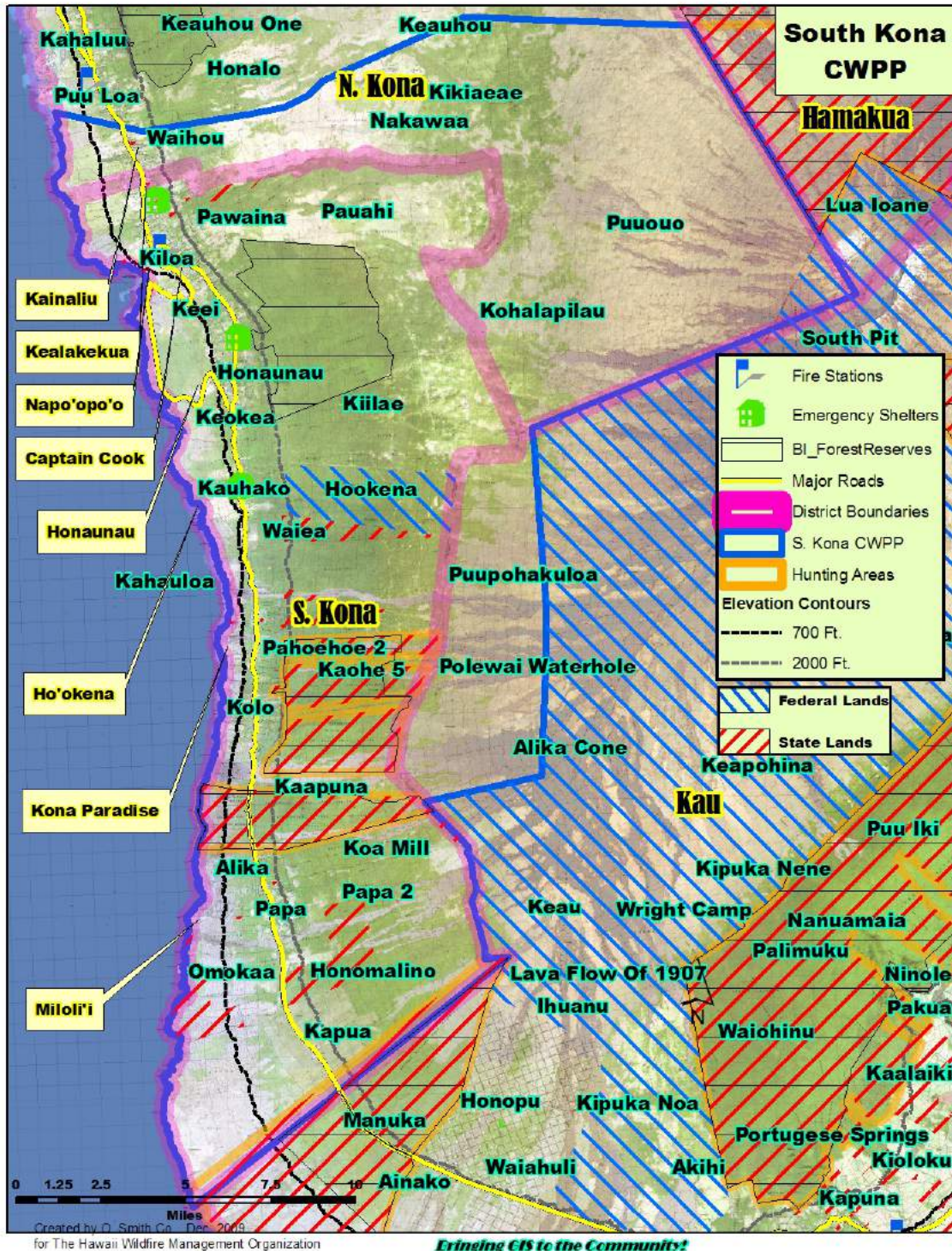


Figure 3. Community Base Map.



## Community Risk Assessment

As designated on the Community Bas Map (Figure 3 above), the following table lists the community assets, resources, and values at risk. With fire fighting agencies and landowners, HWMO assessed these resources for relative risk of wildfire and assigned a hazard ranking of low (LOW), moderate (MOD), or High (HIGH) for the following categories:

- *Fuel Hazards* – An evaluation of vegetation conditions within the community and on adjacent lands.
- *Risk of Wildfire Occurrence* – An evaluation of the probability of fire ignition within the community and surrounding lands, based on fuels, weather, topography, likelihood of ignition.
- *Structural Ignitability*- An evaluation of the vulnerability of structures within the community to ignition from firebrands, radiation, and convection.

The fourth category, *Local Preparedness and Fire Suppression Capacity*, describes the capacity of fire suppression resources, proximity to water resources, accessibility and proximity to adequate roads, defensible space, etc. Capacity is assigned a ranking of poor (POOR), moderate (MOD), or excellent (EXCELLENT). The ranking for capacity is inversely proportional to hazard, e.g. poor preparedness and suppression capacity creates a high hazard.

Community Resource, Structure, or Value at Risk	RANKED BY HAZARD			RANKED BY CAPACITY	OVERALL RISK
	Fuel Hazard	Risk of Wildfire Occurrence	Structural Ignitability	Preparedness & Suppression Capacity	
Homes at lower elevation areas	MOD-HIGH	MOD	HIGH	POOR	MOD-HIGH
Homes at mid-elevation (agricultural belt) areas	MOD	MOD	HIGH	MOD	MOD
Homes and structures at higher elevation areas	HIGH	*	HIGH	POOR (no water, limited access)	MOD-HIGH
Businesses including historic buildings along Mamalahoa Hwy and associated economic, scenic, and historical values	LOW-MOD	LOW	HIGH	MOD	MOD
Historical sites throughout South Kona and associated cultural values	MOD-HIGH	MOD-HIGH	MOD	MOD	MOD
Agricultural grazing lands and associated cultural, economic, and scenic values	*	MOD-HIGH	MOD	POOR-MOD (no water, limited access)	MOD-HIGH
Farms- Coffee, Mac Nuts, etc. and associated cultural, economic, and scenic values	LOW	LOW	MOD	POOR-MOD (no water, limited access)	LOW-MOD
Mauka forested lands, parks, and reserves, and associated cultural, scenic, recreational, and environmental values	*	MOD-HIGH	MOD	POOR (no water, limited access, difficult terrain)	HIGH

Community Resource, Structure, or Value at Risk	RANKED BY HAZARD			RANKED BY CAPACITY	OVERALL RISK
	Fuel Hazard	Risk of Wildfire Occurrence	Structural Ignitability	Preparedness & Suppression Capacity	
Coastal areas and parks, and associated cultural, scenic, recreational, and environmental values	LOW-MOD	MOD	MOD	MOD	MOD
Schools (Konawaena Elementary, Konawaena Middle School, Konawaena High School, Honaunau Elementary, Ho'okena Elementary, Honaunau ECE)	LOW-MOD	LOW-MOD	MOD	MOD	LOW-MOD
Kona Community Hospital	LOW-MOD	LOW-MOD	MOD	MOD	LOW-MOD

\* Fuels and risk are dependent on 1) the season, and 2) fuels management practices, i.e. grazing, mechanical/chemical treatments, etc. Fuels and risk are LOW- MOD if fuels are properly managed and it is a wet year; fuels and risk are HIGH if fuels are not managed and it is a dry year.

### Communities at Risk from Wildfires

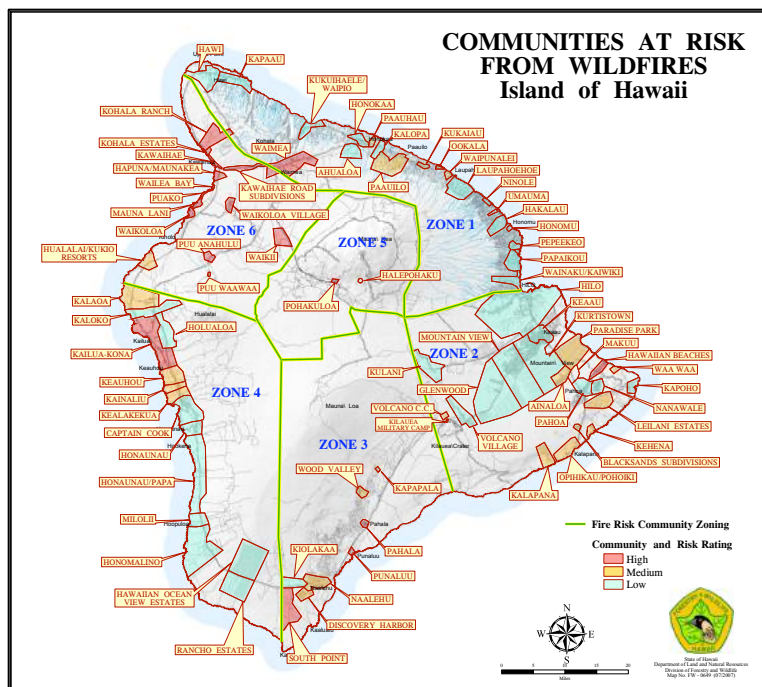


Figure 4. DOFAW Communities at Risk From Wildfires Map, 2005.

The delineation of areas and resources at risk in South Kona builds on the *Communities at Risk from Wildfires, Island of Hawaii* assessment, mapped in 2005 by the Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW), (Figure 4, left). At that time, only the communities from Keauhou to Kealahou received an elevated community risk rating (ranked in 2005 as medium risk). Updated hazard rankings for South Kona (table above) and fire history (Figure 2) demonstrate elevated risk to a variety of community resources, structures, and values throughout the entire South Kona area. Community priorities are based on the updated risk assessment, and address threatened

resources according to overall risk ranking rather than by specific towns or neighborhoods.

## Overall Community Priorities

Community value and cultural value were determined for each community resource, structure, or value at risk. The following table demonstrates the value of each resource to the community, and its priority level for mitigation/protection based on its value and overall risk of wildfire.

Community Resource, Structure, or Value at Risk	Overall Risk (from above)	Community Value	Cultural Value	Overall Priority
Homes at lower elevation areas	MOD-HIGH	HIGH	HIGH	HIGH
Homes at mid-elevation (agricultural belt) areas	MOD	HIGH	HIGH	HIGH
Homes and structures at higher elevation areas	MOD-HIGH	HIGH	HIGH	HIGH
Businesses including historic buildings along Mamalahoa Hwy	MOD	VERY HIGH	VERY HIGH	HIGH
Historical sites throughout South Kona	MOD	HIGH	VERY HIGH	HIGH
Agricultural grazing lands	MOD-HIGH	VERY HIGH	HIGH	HIGH
Farms	LOW-MOD	VERY HIGH	HIGH	HIGH
Mauka forested lands, parks, and reserves	HIGH	VERY HIGH	VERY HIGH	VERY HIGH
Coastal areas and parks	MOD	VERY HIGH	VERY HIGH	HIGH
Schools and Hospital	LOW-MOD	VERY HIGH	HIGH	HIGH

## Community Concerns

In addition to prioritizing resources to protect, community and agency representatives developed a list of concerns regarding wildfire issues. They are listed below in order of priority:

1. Insufficient water infrastructure to adequately and quickly suppress wildfires, including dip tanks.
2. Inadequate fire suppression and support resources, such as rapid and on-site mapping capabilities and GPS technologies, vehicles, water tankers.
3. Regional and local planning and development standards do not require community and subdivision designs to consider and/or mitigate fire risk:
  - a. Design, materials, and placement of structures and landscaping promote/do not mitigate fire risk.
  - b. Roads and highways are not always constructed with wide shoulders, fire lanes, emergency ingress/egress, or fuel mitigation in mind.
4. Fuel loading along roadsides, in community open areas, around and between individual homes and farms.
5. Lack of public awareness of the wildfire threat, to include lack of appropriate awareness by elected officials, planning agencies, land managers, scientists, and homeowners regarding:

- a. Fire history and fire hazards.
  - b. Fire-mitigating landscaping techniques.
  - c. Fuels management tools and methods.
  - d. Common human-caused fire starts, such as roadside ignitions, fireworks, catalytic converters, and arsonists.
6. Need to increase/integrate communication (protocols, equipment, pre- and post- fire planning) between state, federal, and county agencies, particularly to maximize initial attack capabilities and to utilize specialized wildland expertise and training for wildfire situations.
  7. Need to reduce and/or control invasive species that possess inherent fire or ignition properties, e.g. ignite easily and/or carry fire easily.
  8. Arson- Not well known whether there is amnesty for reporting nor what civil liabilities and penalties exist for arsonists.
  9. Lack of emergency access staging areas and safety zones/areas within subdivisions for evacuation purposes.
  10. Inadequate community egress and firefighting vehicle ingress during a wildfire. Need to identify evacuation routes/roads within subdivisions.

## HAZARD REDUCTION PRIORITIES

### Purpose and Methods

Priority action items have been developed from a number of sources, including input from community and agency participants in the planning process, noted deficiencies in local firefighting capabilities, and issues identified through the risk assessment. These actions address the following goals:

1. Enhance wildfire response capabilities.
2. Reduce risk and hazards through pro-active wildfire mitigation, including:
  - Increasing stakeholder knowledge about wildfire risk through education and outreach.
  - Encouraging the treatment of structural ignitability.
  - Prioritizing fuel reduction projects.
  - Increasing opportunities for collaboration and coordination to implement wildfire mitigation projects.
3. Address the list of community concerns.

These priority action items follow the guidelines for HFRA, which requires:

- Step 6a- Community Hazard Reduction Priorities
  - Priority Actions (General)
  - Hazardous Fuels Reduction
- Step 6b- Recommendations to Reduce Structural Ignitability

### Priority Actions for South Kona

Action items addressing wildfire issues are listed below, in order of priority:

1. Install pre-staged static water and helicopter dip tanks.
2. Acquire adequate resources for first responders:
  - a. Appropriate technology resources for mapping at each fire station and on-location.
  - b. Water tanker/tenders (minimum 2000-gallon tanker/tender with high wheelbase for off-highway capabilities).
3. Wise development in fire prone areas. Create development standards and implement community planning that requires the mitigation of wildfire risks at the regional, community/subdivision, roads/highways, and individual structure levels.
4. Reduce fuel load and/or appropriately convert fuels along road sides, in community open areas, around individual homes:
  - a. Appropriate conversion would include transition to vegetation with low ignition potential and low ability to carry fire, especially native plants. This can be accomplished through installing/ establishing living fuel breaks.
  - b. Reduction of fuels could be by carried out through managed grazing, mechanical reduction, prescribed fire, herbicide or combinations of all treatments.
  - c. Encourage/educate large landowners to reduce fuels on private property.
  - d. Identify opportunities to assist vulnerable populations (elderly, disabled) in creating defensible space around homes and property.

5. Continue fire prevention education and outreach, including arson prevention education:
  - a. Hold community workshops.
  - b. Implement the fire danger rating system.
  - c. Provide individual home and neighborhood assessments.
  - d. Increase public service announcements during high fire hazard periods.
  - e. Develop wildland fire materials for youth and implement educational programs in local schools.
6. Increase communication capabilities between state, federal, and county agencies, particularly to maximize initial attack capabilities in wildfire events:
  - a. Integrate current and future communication equipment utilized by federal, state, and county fire suppression personnel to increase effective firefighting response.
  - b. Develop protocols for multi-agency involvement to utilize available specialized wildland fire expertise and equipment/resources.
7. Reduce and/or control invasive species that increase fire risk and, where appropriate, convert to vegetation as described in priority number three.
8. Advocate for increased penalties for arson and some level of amnesty for reporting fire.
9. Develop emergency staging areas within communities and promote awareness of such areas within the community, including holding mock disaster drills.
10. Create/improve secondary access roads for those communities with only one means of ingress/egress; identify evacuation route roads within subdivisions, especially in neighborhoods where secondary access roads are not available.

### **Hazardous Fuels Reduction**

A CWPP must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will protect one or more at-risk communities and essential infrastructure. Based on the fuel hazard ratings acquired during the hazard assessment, recommendations for the type and method of vegetative fuels reduction treatments for high fuel hazard areas are listed in this table.

<b>Community Resource, Structure, or Value at Risk</b>	<b>Fuel Hazard Rating</b>	<b>Type of Treatment</b>	<b>Method of Treatment</b>
Agricultural grazing lands	HIGH IF UNMANAGED	Mechanical	Continue properly managed grazing
Mauka forested lands, parks, and reserves, and	HIGH IF UNMANAGED	Mechanical, hand labor, chemical	Continue properly managed grazing, weed whip, mow, hand-pull, and herbicide where appropriate. Conduct post-fire restoration as appropriate.
Homes and structures at higher elevation areas	HIGH	Mechanical, hand labor, chemical, fuels conversion	Continue properly managed grazing, weed whip, mow, hand-pull, and herbicide where appropriate. Convert fuels to landscaping with drought-tolerant, fire-resistant plants.
Homes at lower elevation areas	MOD-HIGH	Mechanical, hand labor, chemical, fuels conversion	Weed whip, mow, hand-pull, and herbicide where appropriate. Convert fuels to drought-tolerant, fire-resistant plants.

Community Resource, Structure, or Value at Risk	Fuel Hazard Rating	Type of Treatment	Method of Treatment
Historical sites throughout South Kona	MOD-HIGH	Mechanical, hand labor, chemical, fuels conversion	Weed whip, mow, hand-pull, and herbicide where appropriate. Convert fuels to drought-tolerant, fire-resistant plants.
Roadsides	MOD-HIGH IF UNMANAGED	Mechanical, hand labor, chemical	Continue roadside treatment: mowing, herbicide spray, weed whip. Where appropriate convert fuels to fire-resistant plants that do not require little or no maintenance.

The photos below provide examples of hazardous fuels and wildfire risk in the South Kona area.



**Photo 6.** The wildland-urban interface in the coastal communities of South Kona has steep terrain, limited access for suppression, dry hazardous fuels, and little to no water resources. Wildfires can spread quickly, threatening lives and homes.



**Photo 7.** Unmanaged vegetation in between houses (pictured above) can carry wildfires rapidly through neighborhoods.



**Photo 8.** (Left) Low-elevation fuels in South Kona include grasses and shrubs. Seedpods from burning *Haole Koa* (in foreground) create flying embers that can ignite areas miles away. Note the hazy conditions in background, caused by smoke blown toward the coast from upland fires.



**Photo 9.** Green waste dumping along roadsides substantially increases fire hazard and likelihood of roadside ignition.



**Photo 10.** (Above) Evidence of fire in unmanaged roadside fuels is found throughout the South Kona area. Pictured above: Napo'opo'o Road.



**Photo 11.** (Above) Continued roadside fuels management on Highway 11 is a priority wildfire mitigation action for South Kona.



**Photo 12. (Left)  
Photo 13. (Right)**

Reducing fuels around homes, in vacant lots, and along roadsides is also a priority action for wildfire mitigation in South Kona. Wildfire can spread easily and rapidly through unmanaged fire fuels on personal properties such as these.



### **Reducing Structural Ignitability**

A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures. Individuals and community associations can reduce structural ignitability throughout their community by taking the following measures recommended by the Firewise program as outlined below. However, because the most endangered dryland forest in the world and critical habitat are in Kona, it is highly recommended that individuals and communities consult with dryland foresters or biologists before clearing trees and significant amounts of vegetation.



Recommendations for reducing structural ignitability:

- Create a buffer zone of defensible space around a property of at least 30 feet or to the property line if the house has less than 30 feet of yard. Remove flammable vegetation and combustible growth within 30 feet of the house.
- Prune tree limbs 6 – 10 feet above the ground.
- Space trees and shrubs ten feet apart in the yard.
- Make sure that plants closest to the house are low-lying.
- Whenever possible use fire-resistant Native Hawaiian species. Succulent plants are also good choices for converting fire fuels into Firewise landscaping.
- Routinely remove dead leaves and other organic matter from the yard.
- Sweep and/or clean gutters, eaves, and roofs regularly to prevent the build-up of leaves and other matter.
- Use fire-resistant building materials for the roof, siding, and decks, such as metal, stucco, tile, brick, and cement.
- Install firebrand-proof ceiling vents to prevent structure fires caused by wind-blown firebrands.

## ACTION PLAN

The South Kona CWPP Action Plan follows the guidelines for HFRA:

- Step 7a- Develop and Action Plan
- Step 7b- Develop an Implementation and Maintenance (Assessment) Strategy
- Step 8- Finalize Plan

### South Kona CWPP Action Plan

The South Kona CWPP Action Plan was developed through an analysis of the issues identified in the risk assessment, community and agency meetings, and through a review of other Community Wildfire Protection Plans. Federal, State, and County agencies, and private landowners were invited to submit projects that provide protection and reduce risk. The community concerns and action items listed above served as the basis for the projects listed below that will guide hazard reduction efforts in the future.

Landowners and agencies are invited to continue to submit projects that provide community protection and mitigate wildfire risk. HWMO and the Big Island Wildfire Coordinating Group intend to meet annually to evaluate progress on projects and mutually agree on treatment priorities. Additional projects will be displayed as appendices in updated versions of this plan.

The following table lists initial projects suggested to address community hazard reduction priorities.

Project	Agency	Funding Needs	Time-table	Community Recommended
Install of pre-staged static water and helicopter dip tanks	Multiple Agencies: federal, state, county, and private	Cooperative Funding \$828,000	2011-2013	Yes
Reduce and/or convert fuel load along roadsides, community open areas, and individual homes	Multiple Agencies: county	Cooperative Funding \$850,000	2010 - 2014	Yes
Create development standards and conduct community planning that requires the mitigation of wildfire risks	Multiple Agencies: county and state	Cooperative Funding \$150,000 for outreach, any needed impact studies and education		Yes
Increase mapping technologies and capabilities for fire agencies	Multiple Agencies: federal, state, county, and private	Cooperative funding: \$100,000	2010-2013	Yes
Install street signage identifying evacuation routes	Multiple Agencies: federal, state, county, and private	Cooperative Funding \$50,000	2010 - 2014	Yes

<b>Project</b>	<b>Agency</b>	<b>Funding Needs</b>	<b>Time-table</b>	<b>Community Recommended</b>
Develop emergency staging areas within communities, promoting awareness of such areas within the community, including holding mock disaster drills	Multiple agencies: private	Cooperative Funding \$33,000 for planning and outreach	2010 - 2012	Yes
Reduce, control, and or convert of invasive species	Multiple Agencies: federal, state, county, and private	Cooperative Funding \$1,500,000 includes maintenance, grazing, and conversion projects	2008 - 2012	Yes
Continue fire prevention education and outreach, including arson prevention education	Multiple agencies: federal, state, county, and private	Cooperative Funding \$30,000	2010 - 2014	Yes
Increase effective integrated communication and initial attack protocol between federal, state, and county fire suppression agencies	Multiple agencies	Cooperative Funding \$150,000	2010 - 2014	Yes

### **Plan Implementation and Maintenance**

The Healthy Forest Restoration Act (HFRA) requires that the Hawai'i County Fire Department, the Hawai'i County Civil Defense Department, and the Hawaii Department of Land and Natural Resources all agree on the final contents of the South Kona CWPP. The plan will be signed by each agency in order to meet HFRA and FEMA requirements. Because of the non-regulatory nature of the CWPP, the relevance and effectiveness of the South Kona CWPP will rely heavily upon community initiative and involvement. Expertise, technical support, and implementation assistance will be provided by the appropriate agencies and organizations involved in fire issues in the South Kona Area.

Hawaii Wildfire Management Organization, in cooperation with the Big Island Wildfire Coordinating Group, will provide technical support, identify and coordinate funding, and serve as a centralized resource for wildfire risk reduction efforts for South Kona. Together, representatives will prioritize and recommend funding for projects, document the successes and lessons learned from those projects, and evaluate and update the CWPP as needed.

Many South Kona CWPP action items will require continuing support for wildfire risk mitigation projects. This will involve actively pursuing funding for projects, staying informed and in contact with one another, and updating the CWPP regularly so that it remains a "living" document. Continuing to build community awareness and fostering community ownership of these issues and actions will assist with creating support for individual and community investment in projects.

**Finalize Plan**

The following County, State, and Federal representatives have a high level of interest in the protection of the South Kona area from wildfire, and have reviewed and support this CWPP. Contact information for principal government stakeholders is listed below.

**Federal:**

**Pohakuloa Training Area (U.S. Army)**

Eric Moller, Deputy Fire Chief  
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**Hawaii Volcanoes National Park**

Joe Molhoek, Pacific Island Fire Mgmt. Officer  
PO Box 52, HNP, HI 96718  
(808) 985-6042  
Joe\_Molhoek@nps.gov



**State:**

**Department of Land and Natural Resources:  
Division of Forestry and Wildlife**

Wayne F. Ching, State Protection Forester  
1151 Punchbowl St., Room 325, Honolulu, HI 96813  
(808) 587-4173  
Wayne.F.Ching@hawaii.gov



**County:**

**Hawaii Fire Department**

Fire Chief Darryl Oliveira  
25 Aupuni St., Hilo, HI 96720  
(808) 981-8394  
Hcfdfl@co.hawaii.hi.us



**County:**

**Hawaii County Civil Defense**

Quince Mento, Civil Defense Administrator  
920 Ululani St., Hilo, HI 96720  
(808) 961-8229  
qmento@co.hawaii.hi.us



The Signature Page presented at the beginning of this document demonstrates the required multi-agency participation and acknowledgement of this plan.

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[http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108\\_cong\\_bills&docid=f:h1904enr.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_bills&docid=f:h1904enr.txt.pdf)
- <sup>ii</sup> **Kona Community Development Plan. 2008**  
<http://www.hcrc.info/community-planning/north-and-south-kona-cdp/cdp-final-drafts/>
- <sup>iii</sup> **Hawaii County Multi-Hazard Mitigation Plan, 2003**  
<http://co.hawaii.hi.us/cd/mmp/main.html>
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- <sup>v</sup> **County of Hawaii Drought Mitigation Strategies, 2004**  
<http://hawaii.gov/dlnr/drought/preparedness/HawaiiDroughtMitigationStrategies.pdf>
- <sup>vi</sup> **Ka‘u to South Kona Water Master Plan, 2004**  
[http://www.co.hawaii.hi.us/info/projectsarchive/k2skwmp/finalrpt/WMPFinal\\_Sept2004.pdf](http://www.co.hawaii.hi.us/info/projectsarchive/k2skwmp/finalrpt/WMPFinal_Sept2004.pdf)
- <sup>vii</sup> **State Drought Plan and the County Drought Mitigation Strategies**  
<http://hawaii.gov/dlnr/drought/preparedness.htm>
- <sup>viii</sup> **State of Hawaii Multi-Hazard Mitigation Plan, 2007**  
[http://www.scd.state.hi.us/HazMitPlan/executive\\_summary.pdf](http://www.scd.state.hi.us/HazMitPlan/executive_summary.pdf)
- <sup>ix</sup> **Big Island Wildfire Coordinating Group**  
[http://www.state.hi.us/dlnr/dofaw/fmp/biwcg\\_charter.htm#Duties](http://www.state.hi.us/dlnr/dofaw/fmp/biwcg_charter.htm#Duties)

# **Addendum 1**

## South Kona Community Wildfire Protection Plan January 2015 Update



Photo Credit: Jody Fergerstrom

### **Coordinated and developed by:**

Hawaii Wildfire Management Organization, a 501(c)3 nonprofit organization dedicated to protecting Hawaii's communities and natural resources from wildfire.



### **Updated in partnership with:**

Hawaii County Civil Defense, Hawaii Fire Department, State of Hawaii Department of Land and Natural Resources Division of Forestry and Wildlife

### **Written by:**

Elizabeth Pickett and Ilene Grossman, Hawaii Wildfire Management Organization, © 2015

### **Funded by:**

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<b>Cover photo.</b>	2009-2010 Upland fire in South Kona. Photo Credit: Jody Fergerstrom.
<b>Photo 2.</b>	Unmanaged vegetation in between houses can carry wildfires rapidly through neighborhoods. Photo Credit: HWMO
<b>Photo 3.</b>	South Kona participants work in small groups to identify wildfire concerns and prioritize recommendations. Photo Credit: HWMO
<b>Photo 4.</b>	South Kona participants select areas and resources of high value on the community base map. Photo Credit: HWMO

## **CWPP Update Overview**

January 15, 2015

At the time of this update, there are currently five CWPPs for Hawaii Island including: Volcano, Ka'ū, Ocean View, South Kona and NW Hawaii Island. Although there is no requirement to update the CWPPs, Hawaii Wildfire Management Organization (HWMO) staff and technical advisors determined an update would be an important tool to revitalize community engagement and action in wildfire protection and hazard reduction activities. In addition, the community input and action projects needed to be updated. Wildfire hazard is predicted to increase with high vegetation and continued drought.

Within the last two years, HWMO conducted a statewide wildfire hazard assessment and a statewide wildfire history map that shows wildfire ignitions on each island between 2002-2011. The resulting maps and assessments for the South Kona CWPP planning area are included in this addendum.

Community input is critical to making the plan a living document that can be used as a resource to help guide community associations, fire agencies, landowners, and natural resource agencies towards meeting their fire protection goals. The CWPP Update process provided a venue for residents and agency personnel to discuss wildfire concerns and brainstorm solutions together during four community meetings.



## Wildfire Ignitions Map

The map below displays results from an HWMO-led effort to compile wildfire records from all fire suppression agencies across the state, which resulted in a quality-controlled wildfire database and region-specific wildfire incident maps. The South Kona Wildfire Incident Map (Figure 1 below) includes data from the following agencies between 2002-2012: Hawaii County Fire Department, Hawaii Volcanoes National Park, and Department of Land and Natural Resources Division of Forestry and Wildlife (DLNR-DOFAW). Statewide, 1,854 wildfire ignitions were mapped out of a total of 2,707 total fire records. Unmapped fires are a result of unavailable or ambiguous fire location information firefighting records. It is important to note that the map below displays ignition points, and does not indicate the size of wildfires or the final perimeters of burned areas. Ignitions are important for understanding trends and patterns of fires. From the map below it is clear that WUI, roadside, and human access area fire starts are important trends across the South Kona region.

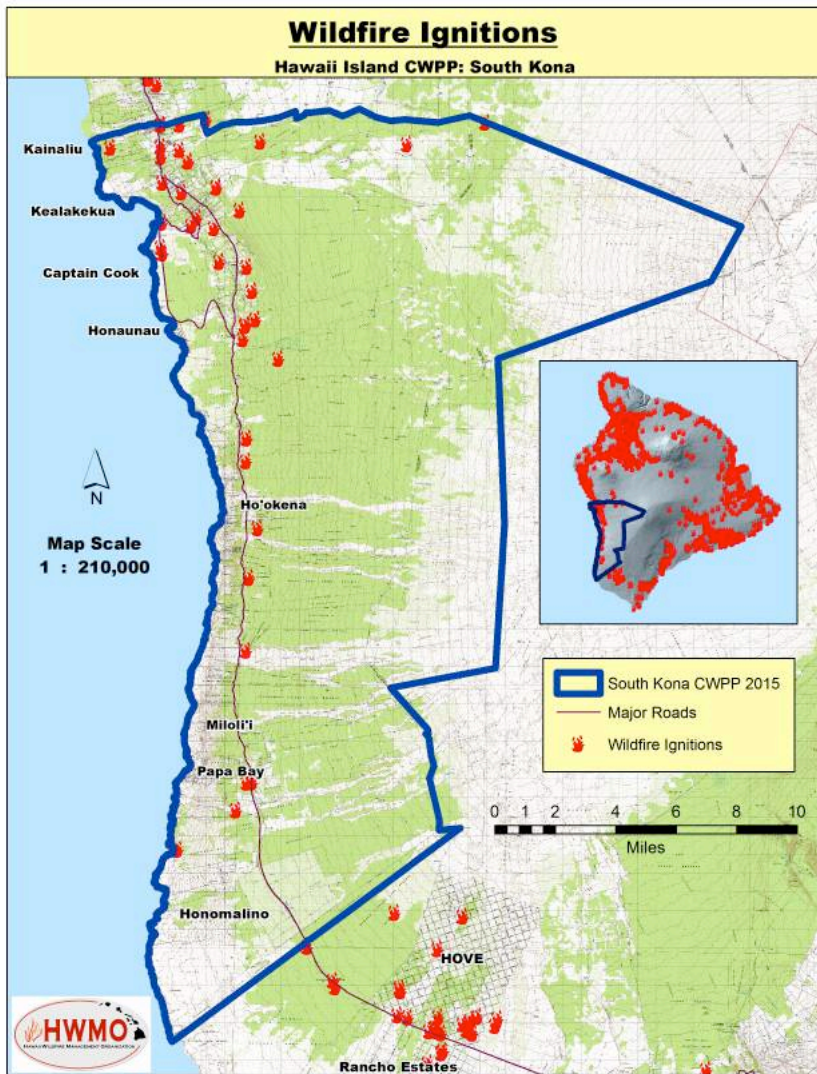


Figure 1. Wildfire Ignitions Map

## Wildfire Hazard Assessment Maps and Ratings

In 2011-2013, HWMO staff assessed subdivisions across the state to rate wildfire hazards within the following categories: Vegetation, Building, Subdivision, Fire Environment and Fire Protection. Each of those categories is comprised of several contributing factors, all of which were assessed and ranked with a rating of high, moderate, or low hazard, depending on their characteristics. The categories and specific hazard ratings assigned to the subdivision areas with the South Kona CWPP planning area are below:

### Subdivision Hazard Ratings

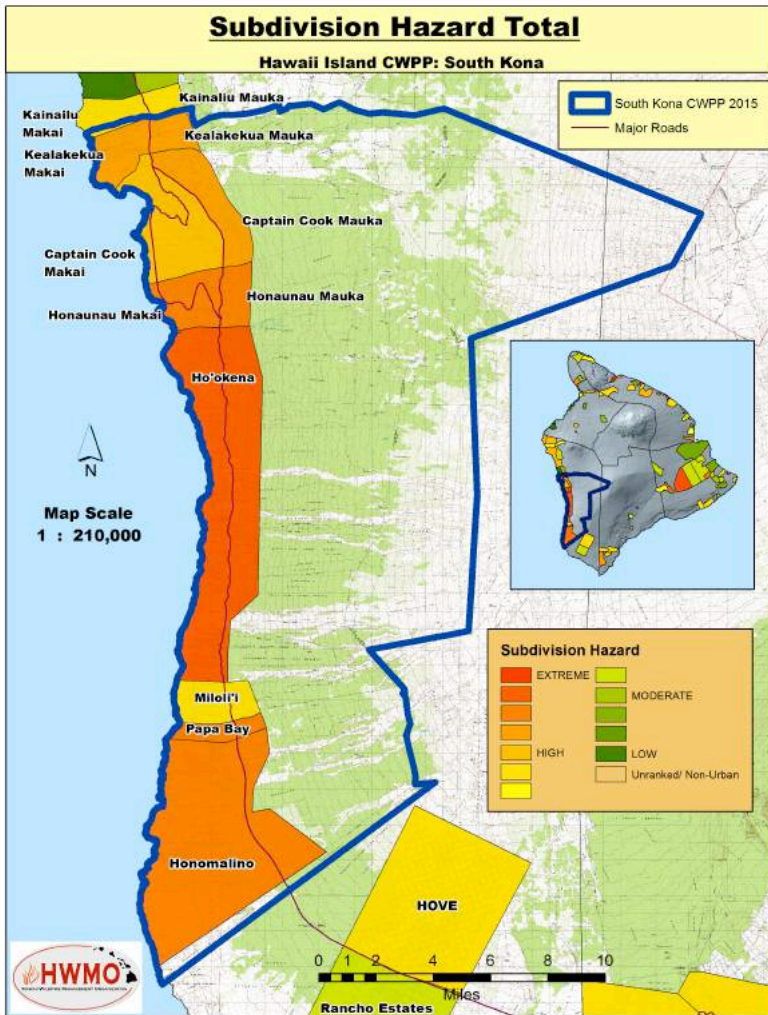


Figure 2. Subdivision Hazard Total Map

South Kona Subdivision Hazards		
Specific Hazard	Subdivision	Hazard Rating
Ingress/ Egress	Kealakekua Makai	Moderate - Limited access routes. 2 ways in and 2 ways out. Moderate grades.
	Kealakekua Mauka	Moderate - Limited access routes. 2 ways in and 2 ways out. Moderate grades.
	Captain Cook Makai	High - Narrow, dead end roads or 1 way in, 1 way out. Steep grades
	Captain Cook Mauka	High - Narrow, dead end roads or 1 way in, 1 way out. Steep grades
	Honaunau Makai	Moderate - Limited access routes. 2 ways in and 2 ways out. Moderate grades.
	Honaunau Mauka	High - Narrow, dead end roads or 1 way in, 1 way out. Steep grades
	Ho'okena	High - Narrow, dead end roads or 1 way in, 1 way out. Steep grades
	Miloli'i	High - Narrow, dead end roads or 1 way in, 1 way out. Steep grades

	Papa Bay	<b>High</b> - Narrow, dead end roads or 1 way in, 1 way out. Steep grades
	Honomalino	<b>High</b> - Narrow, dead end roads or 1 way in, 1 way out. Steep grades
<b>Road Maintenance</b>	Kealakekua Makai	<b>High</b> - Narrow and or single lane, minimally maintained, no shoulders.
	Kealakekua Mauka	<b>High</b> - Narrow and or single lane, minimally maintained, no shoulders.
	Captain Cook Makai	<b>Moderate</b> - Roads maintained. Some narrow two lane roads with no shoulders.
	Captain Cook Mauka	<b>Moderate</b> - Roads maintained. Some narrow two lane roads with no shoulders.
	Honaunau Makai	<b>Moderate</b> - Roads maintained. Some narrow two lane roads with no shoulders.
	Honaunau Mauka	<b>High</b> - Narrow and or single lane, minimally maintained, no shoulders.
	Ho'okena	<b>Moderate</b> - Roads maintained. Some narrow two lane roads with no shoulders.
	Miloli'i	<b>Moderate</b> - Roads maintained. Some narrow two lane roads with no shoulders.
	Papa Bay	<b>Moderate</b> - Roads maintained. Some narrow two lane roads with no shoulders.
	Honomalino	<b>Moderate</b> - Roads maintained. Some narrow two lane roads with no shoulders.
<b>Road Width</b>	Kealakekua Makai	<b>Moderate</b> - 20'-24' wide. Medium width roads with drivable shoulders and good visibility, support evacuation and emergency response time.
	Kealakekua Mauka	<b>Moderate</b> - 20'-24' wide. Medium width roads with drivable shoulders and good visibility, support evacuation and emergency response time.
	Captain Cook Makai	<b>Moderate</b> - 20'-24' wide. Medium width roads with drivable shoulders and good visibility, support evacuation and emergency response time.
	Captain Cook Mauka	<b>Moderate</b> - 20'-24' wide. Medium width roads with drivable shoulders and good visibility, support evacuation and emergency response time.
	Honaunau Makai	<b>High</b> - Less than 20 feet wide. Narrow roads coupled with poor visibility limit evacuation and emergency response. Traffic problems will occur. Entrapment is likely.
	Honaunau Mauka	<b>Moderate</b> - 20'-24' wide. Medium width roads with drivable shoulders and good visibility, support evacuation and emergency response time.
	Ho'okena	<b>Moderate</b> - 20'-24' wide. Medium width roads with drivable shoulders and good visibility, support evacuation and emergency response time.
	Miloli'i	<b>High</b> - Less than 20 feet wide. Narrow roads coupled with poor visibility limit evacuation and emergency response. Traffic problems will occur. Entrapment is likely.
	Papa Bay	<b>High</b> - Less than 20 feet wide. Narrow roads coupled with poor visibility limit evacuation and emergency response. Traffic problems will occur. Entrapment is likely.
	Honomalino	<b>Moderate</b> - 20'-24' wide. Medium width roads with drivable shoulders and good visibility, support evacuation and emergency response time.
<b>All-Season Road Condition</b>	Kealakekua Makai	<b>Moderate</b> - Surfaced road with 5%+ grade or non-surfaced road with <5% grade that can still support fire equipment. Road and right-of-way maintenances is essential for access and visibility.
	Kealakekua Mauka	<b>Moderate</b> - Surfaced road with 5%+ grade or non-surfaced road with <5% grade that can still support fire equipment. Road and right-of-way maintenances is essential for access and visibility.
	Captain Cook Makai	<b>Moderate</b> - Surfaced road with 5%+ grade or non-surfaced road with <5% grade that can still support fire equipment. Road and right-of-way maintenances is essential for access and visibility.
	Captain Cook Mauka	<b>Moderate</b> - Surfaced road with 5%+ grade or non-surfaced road with <5% grade that can still support fire equipment. Road and right-of-way maintenances is essential for access and visibility.
	Honaunau Makai	<b>Low</b> - Flat or gently sloping surfaced roads can support high volumes of large fire equipment.
	Honaunau Mauka	<b>Moderate</b> - Surfaced road with 5%+ grade or non-surfaced road with <5% grade that can still support fire equipment. Road and right-of-way maintenances is essential for access and visibility.
	Ho'okena	<b>Moderate</b> - Surfaced road with 5%+ grade or non-surfaced road with <5% grade that can still support fire equipment. Road and right-of-way maintenances is essential for access and visibility.
	Miloli'i	<b>Moderate</b> - Surfaced road with 5%+ grade or non-surfaced road with <5% grade that can still support fire equipment. Road and right-of-way maintenances is essential for access and visibility.

	Papa Bay	<b>Moderate</b> - Surfaced road with 5%+ grade or non-surfaced road with <5% grade that can still support fire equipment. Road and right-of-way maintenances is essential for access and visibility.
	Honomalino	<b>Moderate</b> - Surfaced road with 5%+ grade or non-surfaced road with <5% grade that can still support fire equipment. Road and right-of-way maintenances is essential for access and visibility.
<b>Fire Service Access</b>	Kealakekua Makai	<b>Moderate</b> - <300' with no turnaround. Short or dead-end streets will become crowded with homeowner's vehicles.
	Kealakekua Mauka	<b>Moderate</b> - <300' with no turnaround. Short or dead-end streets will become crowded with homeowner's vehicles.
	Captain Cook Makai	<b>Moderate</b> - <300' with no turnaround. Short or dead-end streets will become crowded with homeowner's vehicles.
	Captain Cook Mauka	<b>High</b> - 300'+ with no turnaround. Long dead-end streets will become crowded with vehicles. Two-way visibility is an issue.
	Honaunau Makai	<b>Moderate</b> - <300' with no turnaround. Short or dead-end streets will become crowded with homeowner's vehicles.
	Honaunau Mauka	<b>High</b> - 300'+ with no turnaround. Long dead-end streets will become crowded with vehicles. Two-way visibility is an issue.
	Ho'okena	<b>High</b> - 300'+ with no turnaround. Long dead-end streets will become crowded with vehicles. Two-way visibility is an issue.
	Miloli'i	<b>High</b> - 300'+ with no turnaround. Long dead-end streets will become crowded with vehicles. Two-way visibility is an issue.
	Papa Bay	<b>High</b> - 300'+ with no turnaround. Long dead-end streets will become crowded with vehicles. Two-way visibility is an issue.
	Honomalino	<b>High</b> - 300'+ with no turnaround. Long dead-end streets will become crowded with vehicles. Two-way visibility is an issue.
<b>Street signs</b>	Kealakekua Makai	<b>Low</b> - Present. Most are at least 4' in size and are reflectorized.
	Kealakekua Mauka	<b>Low</b> - Present. Most are at least 4' in size and are reflectorized.
	Captain Cook Makai	<b>Low</b> - Present. Most are at least 4' in size and are reflectorized.
	Captain Cook Mauka	<b>Moderate</b> - Present and reflectorized with some exceptions.
	Honaunau Makai	<b>Moderate</b> - Present and reflectorized with some exceptions.
	Honaunau Mauka	<b>Moderate</b> - Present and reflectorized with some exceptions.
	Ho'okena	<b>Moderate</b> - Present and reflectorized with some exceptions.
	Miloli'i	<b>Moderate</b> - Present and reflectorized with some exceptions.
	Papa Bay	<b>Moderate</b> - Present and reflectorized with some exceptions.
	Honomalino	<b>Moderate</b> - Present and reflectorized with some exceptions.
<b>Structure Density</b>	Kealakekua Makai	<b>Moderate</b> - Density and ignition probability are both moderate, or one is high but is balanced by the other being low.
	Kealakekua Mauka	<b>Moderate</b> - Density and ignition probability are both moderate, or one is high but is balanced by the other being low.
	Captain Cook Makai	<b>Moderate</b> - Density and ignition probability are both moderate, or one is high but is balanced by the other being low.
	Captain Cook Mauka	<b>Low</b> - Low structure density and low ignition probability.
	Honaunau Makai	<b>Moderate</b> - Density and ignition probability are both moderate, or one is high but is balanced by the other being low.
	Honaunau Mauka	<b>Low</b> - Low structure density and low ignition probability.
	Ho'okena	<b>Low</b> - Low structure density and low ignition probability.
	Miloli'i	<b>Low</b> - Low structure density and low ignition probability.
	Papa Bay	<b>Low</b> - Low structure density and low ignition probability.
	Honomalino	<b>Low</b> - Low structure density and low ignition probability.
<b>Home Setbacks</b>	Kealakekua Makai	<b>Moderate</b> - 10-50% of homes have defensible setbacks from property lines and sloped areas.
	Kealakekua Mauka	<b>Moderate</b> - 10-50% of homes have defensible setbacks from property lines and sloped areas.
	Captain Cook Makai	<b>Low</b> - Majority (50%+) of homes are set back from property lines and slopes by at least 30 feet.
	Captain Cook Mauka	<b>Low</b> - Majority (50%+) of homes are set back from property lines and slopes by at least 30 feet.
	Honaunau Makai	<b>Moderate</b> - 10-50% of homes have defensible setbacks from property lines and sloped

		areas.
	Honaunau Mauka	<b>Low</b> - Majority (50%+) of homes are set back from property lines and slopes by at least 30 feet.
	Ho'okena	<b>Low</b> - Majority (50%+) of homes are set back from property lines and slopes by at least 30 feet.
	Miloli'i	<b>Low</b> - Majority (50%+) of homes are set back from property lines and slopes by at least 30 feet.
	Papa Bay	<b>Low</b> - Majority (50%+) of homes are set back from property lines and slopes by at least 30 feet.
	Honomalino	<b>Low</b> - Majority (50%+) of homes are set back from property lines and slopes by at least 30 feet.
<b>Unmanaged, untended, undeveloped lands</b>	Kealakekua Makai	<b>Moderate</b> - Some isolated unmaintained lots or undeveloped vegetated areas within subdivision. 10-50% of lots have not been developed and pose an additional wildfire hazard due to lack of maintenance and/or restricted access. Hazard ranking is dependent on ignition risk, size of area, and fuel type.
	Kealakekua Mauka	<b>Moderate</b> - Some isolated unmaintained lots or undeveloped vegetated areas within subdivision. 10-50% of lots have not been developed and pose an additional wildfire hazard due to lack of maintenance and/or restricted access. Hazard ranking is dependent on ignition risk, size of area, and fuel type.
	Captain Cook Makai	<b>Moderate</b> - Some isolated unmaintained lots or undeveloped vegetated areas within subdivision. 10-50% of lots have not been developed and pose an additional wildfire hazard due to lack of maintenance and/or restricted access. Hazard ranking is dependent on ignition risk, size of area, and fuel type.
	Captain Cook Mauka	<b>Moderate</b> - Some isolated unmaintained lots or undeveloped vegetated areas within subdivision. 10-50% of lots have not been developed and pose an additional wildfire hazard due to lack of maintenance and/or restricted access. Hazard ranking is dependent on ignition risk, size of area, and fuel type.
	Honaunau Makai	<b>High</b> - Abundant unmanaged, vegetated corridors and vacant lots throughout community. Agricultural lands irregularly maintained leaving dry weedy species causing increased ignition risk. Numerous ladder fuels and high risk fuels. Greater than 75% of lots have not been developed or Separation of adjacent structures that can contribute to fire spread
	Honaunau Mauka	<b>Moderate</b> - Some isolated unmaintained lots or undeveloped vegetated areas within subdivision. 10-50% of lots have not been developed and pose an additional wildfire hazard due to lack of maintenance and/or restricted access. Hazard ranking is dependent on ignition risk, size of area, and fuel type.
	Ho'okena	<b>High</b> - Abundant unmanaged, vegetated corridors and vacant lots throughout community. Agricultural lands irregularly maintained leaving dry weedy species causing increased ignition risk. Numerous ladder fuels and high risk fuels. Greater than 75% of lots have not been developed or Separation of adjacent structures that can contribute to fire spread
	Miloli'i	<b>Low</b> - Few to no weedy vacant lots. Few to no undeveloped unmaintained vegetated areas or corridors between homes. Less than 10% of lots remain undeveloped and pose an additional wildfire hazard due to lack of maintenance and/or restricted access.
	Papa Bay	<b>High</b> - Abundant unmanaged, vegetated corridors and vacant lots throughout community. Agricultural lands irregularly maintained leaving dry weedy species causing increased ignition risk. Numerous ladder fuels and high risk fuels. Greater than 75% of lots have not been developed or Separation of adjacent structures that can contribute to fire spread
	Honomalino	<b>Moderate</b> - Some isolated unmaintained lots or undeveloped vegetated areas within subdivision. 10-50% of lots have not been developed and pose an additional wildfire hazard due to lack of maintenance and/or restricted access. Hazard ranking is dependent on ignition risk, size of area, and fuel type.
<b>Private landowner actions / Firewise landscaping and</b>	Kealakekua Makai	<b>Moderate</b> - 30-70% homes have improved survivable space around property and well-maintained landscapes.
	Kealakekua Mauka	<b>Moderate</b> - 30-70% homes have improved survivable space around property and well-maintained landscapes.
	Captain Cook Makai	<b>Moderate</b> - 30-70% homes have improved survivable space around property and well-maintained landscapes.

<b>defensible space</b>	Captain Cook Mauka	<b>Moderate</b> - 30-70% homes have improved survivable space around property and well-maintained landscapes.
	Honaunau Makai	<b>Moderate</b> - 30-70% homes have improved survivable space around property and well-maintained landscapes.
	Honaunau Mauka	<b>Moderate</b> - 30-70% homes have improved survivable space around property and well-maintained landscapes.
	Ho'okena	<b>Moderate</b> - 30-70% homes have improved survivable space around property and well-maintained landscapes.
	Miloli'i	<b>Low</b> - 70% of homes have improved survivable space around property, reduced ignition risk, hardened homes, and no ladder fuels.
	Papa Bay	<b>Moderate</b> - 30-70% homes have improved survivable space around property and well-maintained landscapes.
	Honomalino	<b>Moderate</b> - 30-70% homes have improved survivable space around property and well-maintained landscapes.
<b>Proximity of subdivision to wildland areas</b>	Kealakekua Makai	<b>Moderate</b> - Wildland areas adjoin subdivision on 1-2 sides.
	Kealakekua Mauka	<b>Moderate</b> - Wildland areas adjoin subdivision on 1-2 sides.
	Captain Cook Makai	<b>Moderate</b> - Wildland areas adjoin subdivision on 1-2 sides.
	Captain Cook Mauka	<b>Moderate</b> - Wildland areas adjoin subdivision on 1-2 sides.
	Honaunau Makai	<b>Moderate</b> - Wildland areas adjoin subdivision on 1-2 sides.
	Honaunau Mauka	<b>Moderate</b> - Wildland areas adjoin subdivision on 1-2 sides.
	Ho'okena	<b>High</b> - Wildland areas surround subdivision on at least 3 sides.
	Miloli'i	<b>Low</b> - Wildland areas share no borders with the subdivision. Little to no undeveloped and unmaintained vegetated areas within community. Little to no ladder fuels along community boundaries.
	Papa Bay	<b>High</b> - Wildland areas surround subdivision on at least 3 sides.
	Honomalino	<b>High</b> - Wildland areas surround subdivision on at least 3 sides.

**Table 1.** *Subdivision Hazards*

# Vegetation Hazard Ratings

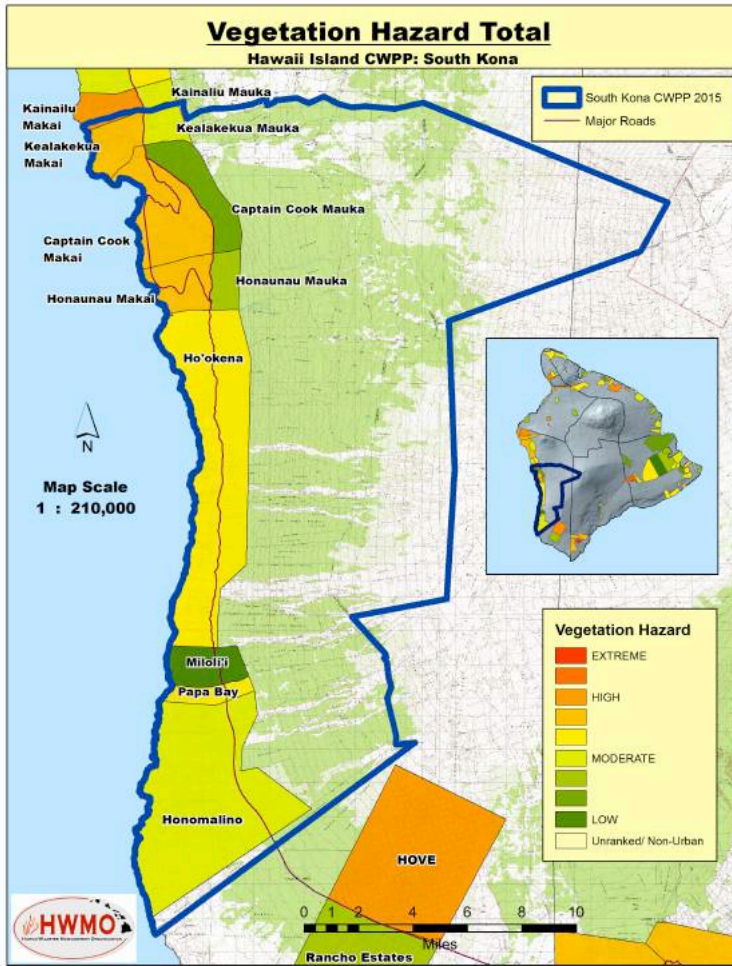


Figure 3. Vegetation Hazard Total Map



Photo 2. Unmanaged vegetation in between houses can carry wildfires rapidly through neighborhoods.

South Kona Vegetation Hazards		
Specific Hazard	Subdivision	Hazard Rating
Proximity of flammable fuels around subdivision	Kealakekua Makai	High - Less than 40'
	Kealakekua Mauka	Moderate - 40-100'
	Captain Cook Makai	Moderate - 40-100'
	Captain Cook Mauka	Low - Greater than 100'
	Honaunau Makai	Moderate - 40-100'
	Honaunau Mauka	Low - Greater than 100'
	Ho'okena	Moderate - 40-100'
	Miloli'i	Low - Greater than 100'
	Papa Bay	High - Less than 40'
	Honomalino	Moderate - 40-100'
Type of predominant vegetation within 300' of homes	Kealakekua Makai	High - Dense grass, brush, timber, and/or hardwoods. Moderate to heavy dead and downed vegetation. Fuels greater than 12 feet tall. Heavy vegetation.
	Kealakekua Mauka	Low - Grasses less than 6 inches in height. Light leaf litter.
	Captain Cook Makai	High - Dense grass, brush, timber, and/or hardwoods. Moderate to heavy dead and downed vegetation. Fuels greater than 12 feet tall. Heavy vegetation.
	Captain Cook Mauka	Moderate - Grasses 6-12 inches in height. Grasses 6-12" tall. Light brush and small

		trees. Patchy fuels.
	Honaunau Makai	<b>High</b> - Dense grass, brush, timber, and/or hardwoods. Moderate to heavy dead and downed vegetation. Fuels greater than 12 feet tall. Heavy vegetation.
	Honaunau Mauka	<b>Moderate</b> - Grasses 6–12 inches in height. Grasses 6-12” tall. Light brush and small trees. Patchy fuels.
	Ho’okena	<b>Moderate</b> - Grasses 6–12 inches in height. Grasses 6-12” tall. Light brush and small trees. Patchy fuels.
	Miloli’i	<b>Moderate</b> - Grasses 6–12 inches in height. Grasses 6-12” tall. Light brush and small trees. Patchy fuels.
	Papa Bay	<b>Moderate</b> - Grasses 6–12 inches in height. Grasses 6-12” tall. Light brush and small trees. Patchy fuels.
	Honomalino	<b>Moderate</b> - Grasses 6–12 inches in height. Grasses 6-12” tall. Light brush and small trees. Patchy fuels.
<b>Fuel loading</b>	Kealakekua Makai	<b>Moderate</b> - 31-70% cover
	Kealakekua Mauka	<b>Moderate</b> - 31-70% cover
	Captain Cook Makai	<b>Moderate</b> - 31-70% cover
	Captain Cook Mauka	<b>Moderate</b> - 31-70% cover
	Honaunau Makai	<b>Moderate</b> - 31-70% cover
	Honaunau Mauka	<b>Moderate</b> - 31-70% cover
	Ho’okena	<b>Moderate</b> - 31-70% cover
	Miloli’i	<b>Low</b> - 0-30% cover
	Papa Bay	<b>Moderate</b> - 31-70% cover
Honomalino	<b>Moderate</b> - 31-70% cover	
<b>Fuel structure and arrangement</b>	Kealakekua Makai	<b>Moderate</b> - Some areas of contiguous vegetation. Few ladder fuels.
	Kealakekua Mauka	<b>Moderate</b> - Some areas of contiguous vegetation. Few ladder fuels.
	Captain Cook Makai	<b>Moderate</b> - Some areas of contiguous vegetation. Few ladder fuels.
	Captain Cook Mauka	<b>Low</b> - Non-contiguous or patchwork arrangement. Little to no ladder fuels.
	Honaunau Makai	<b>Moderate</b> - Some areas of contiguous vegetation. Few ladder fuels.
	Honaunau Mauka	<b>Moderate</b> - Some areas of contiguous vegetation. Few ladder fuels.
	Ho’okena	<b>Moderate</b> - Some areas of contiguous vegetation. Few ladder fuels.
	Miloli’i	<b>Low</b> - Non-contiguous or patchwork arrangement. Little to no ladder fuels.
	Papa Bay	<b>Moderate</b> - Some areas of contiguous vegetation. Few ladder fuels.
Honomalino	<b>Moderate</b> - Some areas of contiguous vegetation. Few ladder fuels.	
<b>Defensible Space/ Fuels reduction around homes &amp; structures</b>	Kealakekua Makai	<b>Moderate</b> - 31-100 ft of vegetation treatment from structures.
	Kealakekua Mauka	<b>Moderate</b> - 31-100 ft of vegetation treatment from structures.
	Captain Cook Makai	<b>Moderate</b> - 31-100 ft of vegetation treatment from structures.
	Captain Cook Mauka	<b>Low</b> - Vegetation is treated 100 feet or more from structures.
	Honaunau Makai	<b>Moderate</b> - 31-100 ft of vegetation treatment from structures.
	Honaunau Mauka	<b>Low</b> - Vegetation is treated 100 feet or more from structures.
	Ho’okena	<b>Moderate</b> - 31-100 ft of vegetation treatment from structures.
	Miloli’i	<b>Low</b> - Vegetation is treated 100 feet or more from structures.
	Papa Bay	<b>Low</b> - Vegetation is treated 100 feet or more from structures.
Honomalino	<b>Low</b> - Vegetation is treated 100 feet or more from structures.	

*Table 2. Vegetation Hazards*



# Building Hazard Ratings

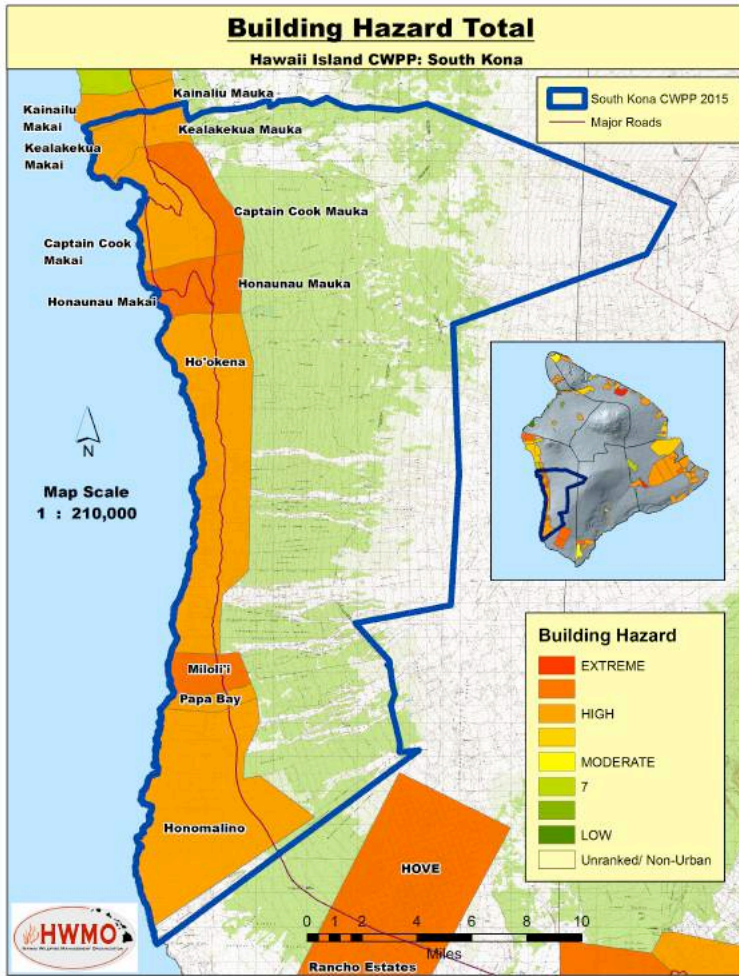


Figure 4. Building Hazard Total Map

South Kona Building Hazards		
Specific Hazard	Subdivision	Hazard Rating
Roofing Assembly	Kealakekua Makai	Low - Greater than 75% of homes have Class A roofs (metal, asphalt, or fiberglass roofing material).
	Kealakekua Mauka	Low - Greater than 75% of homes have Class A roofs (metal, asphalt, or fiberglass roofing material).
	Captain Cook Makai	Low - Greater than 75% of homes have Class A roofs (metal, asphalt, or fiberglass roofing material).
	Captain Cook Mauka	Low - Greater than 75% of homes have Class A roofs (metal, asphalt, or fiberglass roofing material).
	Honaunau Makai	Low - Greater than 75% of homes have Class A roofs (metal, asphalt, or fiberglass roofing material).
	Honaunau Mauka	Low - Greater than 75% of homes have Class A roofs (metal, asphalt, or fiberglass roofing material).
	Ho'okena	Low - Greater than 75% of homes have Class A roofs (metal, asphalt, or fiberglass roofing material).
	Miloli'i	Low - Greater than 75% of homes have Class A roofs (metal, asphalt, or fiberglass roofing material).
	Papa Bay	Low - Greater than 75% of homes have Class A roofs (metal, asphalt, or fiberglass roofing material).

	Honomalino	<b>Low</b> - Greater than 75% of homes have Class A roofs (metal, asphalt, or fiberglass roofing material).
<b>Siding/ Soffits</b>	Kealakekua Makai	<b>Low</b> - Greater than 75% of homes have fire resistant siding and soffits.
	Kealakekua Mauka	<b>Low</b> - Greater than 75% of homes have fire resistant siding and soffits.
	Captain Cook Makai	<b>Low</b> - Greater than 75% of homes have fire resistant siding and soffits.
	Captain Cook Mauka	<b>Low</b> - Greater than 75% of homes have fire resistant siding and soffits.
	Honaunau Makai	<b>Low</b> - Greater than 75% of homes have fire resistant siding and soffits.
	Honaunau Mauka	<b>Low</b> - Greater than 75% of homes have fire resistant siding and soffits.
	Ho'okena	<b>Low</b> - Greater than 75% of homes have fire resistant siding and soffits.
	Miloli'i	<b>High</b> - Less than 50% of homes have fire resistant siding and soffits.
	Papa Bay	<b>Low</b> - Greater than 75% of homes have fire resistant siding and soffits.
	Honomalino	<b>Low</b> - Greater than 75% of homes have fire resistant siding and soffits.
<b>Under- skirting around decks, lanais, post- and-pier structures.</b>	Kealakekua Makai	<b>Moderate</b> - 50-75% of homes have the equivalent of fine non-combustible mesh screening.
	Kealakekua Mauka	<b>Moderate</b> - 50-75% of homes have the equivalent of fine non-combustible mesh screening.
	Captain Cook Makai	<b>High</b> - Less than 50% of homes have the equivalent of fine non-combustible mesh screening.
	Captain Cook Mauka	<b>High</b> - Less than 50% of homes have the equivalent of fine non-combustible mesh screening.
	Honaunau Makai	<b>High</b> - Less than 50% of homes have the equivalent of fine non-combustible mesh screening.
	Honaunau Mauka	<b>High</b> - Less than 50% of homes have the equivalent of fine non-combustible mesh screening.
	Ho'okena	<b>Moderate</b> - 50-75% of homes have the equivalent of fine non-combustible mesh screening.
	Miloli'i	<b>Moderate</b> - 50-75% of homes have the equivalent of fine non-combustible mesh screening.
	Papa Bay	<b>Moderate</b> - 50-75% of homes have the equivalent of fine non-combustible mesh screening.
	Honomalino	<b>Moderate</b> - 50-75% of homes have the equivalent of fine non-combustible mesh screening.
<b>Utilities Placement- Gas and Electric</b>	Kealakekua Makai	<b>High</b> - Both above ground.
	Kealakekua Mauka	<b>High</b> - Both above ground.
	Captain Cook Makai	<b>High</b> - Both above ground.
	Captain Cook Mauka	<b>High</b> - Both above ground.
	Honaunau Makai	<b>High</b> - Both above ground.
	Honaunau Mauka	<b>High</b> - Both above ground.
	Ho'okena	<b>High</b> - Both above ground.
	Miloli'i	<b>High</b> - Both above ground.
	Papa Bay	<b>High</b> - Both above ground.
	Honomalino	<b>High</b> - Both above ground.
<b>Structural Ignitability</b>	Kealakekua Makai	<b>Moderate</b> - 50-75% of homes store combustibles properly.
	Kealakekua Mauka	<b>Moderate</b> - 50-75% of homes store combustibles properly.
	Captain Cook Makai	<b>Low</b> - Greater than 75% of houses are spaced with cleared boundaries. Flammables and combustible materials stored according to fire-safe principles.
	Captain Cook Mauka	<b>Moderate</b> - 50-75% of homes store combustibles properly.
	Honaunau Makai	<b>Moderate</b> - 50-75% of homes store combustibles properly.
	Honaunau Mauka	<b>Moderate</b> - 50-75% of homes store combustibles properly.
	Ho'okena	<b>Moderate</b> - 50-75% of homes store combustibles properly.
	Miloli'i	<b>Moderate</b> - 50-75% of homes store combustibles properly.
	Papa Bay	<b>Moderate</b> - 50-75% of homes store combustibles properly.
	Honomalino	<b>Moderate</b> - 50-75% of homes store combustibles properly.

Table 3. Building Hazards

# Fire Environment Hazard Ratings

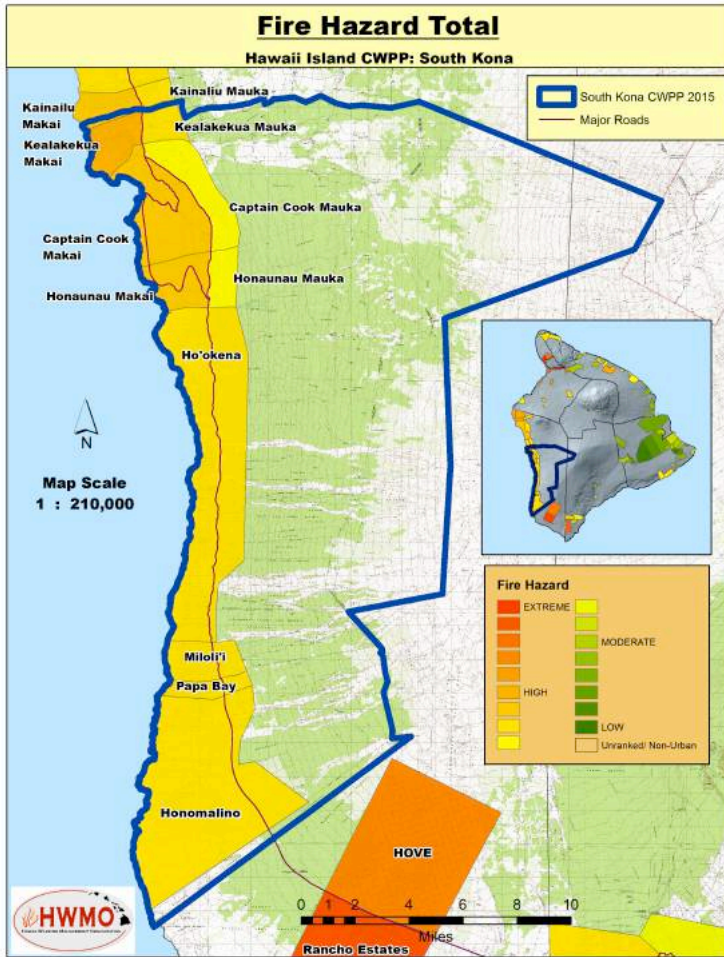


Figure 5. Fire Environment Hazard Total Map

South Kona Fire Environment Hazards		
Specific Hazard	Subdivision	Hazard Rating
Slope	Kealakekua Makai	High - Steep slopes (>30%)
	Kealakekua Mauka	High - Steep slopes (>30%)
	Captain Cook Makai	Moderate - Moderate slopes (10-30%)
	Captain Cook Mauka	High - Steep slopes (>30%)
	Honaunau Makai	High - Steep slopes (>30%)
	Honaunau Mauka	High - Steep slopes (>30%)
	Ho'okena	High - Steep slopes (>30%)
	Miloli'i	High - Steep slopes (>30%)
	Papa Bay	High - Steep slopes (>30%)
	Honomalino	High - Steep slopes (>30%)
Average rainfall *Score 1-6 instead	Kealakekua Makai	Moderate – Moderate Precipitation 4
	Kealakekua Mauka	Moderate – Moderate Precipitation 4
	Captain Cook Makai	Moderate – Moderate Precipitation 3
	Captain Cook Mauka	Moderate – Moderate Precipitation 3
	Honaunau Makai	Moderate – Moderate Precipitation 3
	Honaunau Mauka	Moderate – Moderate Precipitation 3
	Ho'okena	Moderate – Moderate Precipitation 4
	Miloli'i	Moderate – Moderate Precipitation 4

	Papa Bay	<b>Moderate</b> – Moderate Precipitation 4
	Honomalino	<b>Moderate</b> – Moderate Precipitation 4
<b>Prevailing wind speeds and direction</b> <b>*Score 1-4 instead</b>	Kealakekua Makai	<b>Low</b> - Wind rarely (less than 10% of time) exceeds 15 mph. Protection from predominant winds.1
	Kealakekua Mauka	<b>Low</b> - Wind rarely (less than 10% of time) exceeds 15 mph. Protection from predominant winds.1
	Captain Cook Makai	<b>Low</b> - Wind rarely (less than 10% of time) exceeds 15 mph. Protection from predominant winds.1
	Captain Cook Mauka	<b>Low</b> - Wind rarely (less than 10% of time) exceeds 15 mph. Protection from predominant winds.1
	Honaunau Makai	<b>Low</b> - Wind rarely (less than 10% of time) exceeds 15 mph. Protection from predominant winds.1
	Honaunau Mauka	<b>Low</b> - Wind rarely (less than 10% of time) exceeds 15 mph. Protection from predominant winds.1
	Ho'okena	<b>Low</b> - Wind rarely (less than 10% of time) exceeds 15 mph. Protection from predominant winds.1
	Miloli'i	<b>Low</b> - Wind rarely (less than 10% of time) exceeds 15 mph. Protection from predominant winds.1
	Papa Bay	<b>Low</b> - Wind rarely (less than 10% of time) exceeds 15 mph. Protection from predominant winds.1
	Honomalino	<b>Low</b> - Wind rarely (less than 10% of time) exceeds 15 mph. Protection from predominant winds.1
<b>Seasonal or periodic high hazard conditions</b>	Kealakekua Makai	<b>High</b> - Area is seasonally exposed to unusually severe fire weather, drought conditions, lightning storms, desiccated vegetation, and/or strong dry winds.
	Kealakekua Mauka	<b>Moderate</b> - Area is occasionally (e.g., once per decade) exposed to fire prone conditions: drought, lightning storms, desiccated vegetation, and/or strong dry winds.
	Captain Cook Makai	<b>High</b> - Area is seasonally exposed to unusually severe fire weather, drought conditions, lightning storms, desiccated vegetation, and/or strong dry winds.
	Captain Cook Mauka	<b>Moderate</b> - Area is occasionally (e.g., once per decade) exposed to fire prone conditions: drought, lightning storms, desiccated vegetation, and/or strong dry winds.
	Honaunau Makai	<b>High</b> - Area is seasonally exposed to unusually severe fire weather, drought conditions, lightning storms, desiccated vegetation, and/or strong dry winds.
	Honaunau Mauka	<b>Moderate</b> - Area is occasionally (e.g., once per decade) exposed to fire prone conditions: drought, lightning storms, desiccated vegetation, and/or strong dry winds.
	Ho'okena	<b>Moderate</b> - Area is occasionally (e.g., once per decade) exposed to fire prone conditions: drought, lightning storms, desiccated vegetation, and/or strong dry winds.
	Miloli'i	<b>Moderate</b> - Area is occasionally (e.g., once per decade) exposed to fire prone conditions: drought, lightning storms, desiccated vegetation, and/or strong dry winds.
	Papa Bay	<b>Moderate</b> - Area is occasionally (e.g., once per decade) exposed to fire prone conditions: drought, lightning storms, desiccated vegetation, and/or strong dry winds.
	Honomalino	<b>Moderate</b> - Area is occasionally (e.g., once per decade) exposed to fire prone conditions: drought, lightning storms, desiccated vegetation, and/or strong dry winds.
<b>Ignition risk</b>	Kealakekua Makai	<b>Moderate</b> - Some history of wildfire, but not particularly fire prone area due to prevailing lack of fire prone conditions, weather, and vegetation type.
	Kealakekua Mauka	<b>Low</b> - Little to no natural (lightning or lava) ignition risk. No history of arson. Wildland areas absent or distant from public and/or vehicular access.
	Captain Cook Makai	<b>Moderate</b> - Some history of wildfire, but not particularly fire prone area due to prevailing lack of fire prone conditions, weather, and vegetation type.
	Captain Cook Mauka	<b>Low</b> - Little to no natural (lightning or lava) ignition risk. No history of arson. Wildland areas absent or distant from public and/or vehicular access.
	Honaunau Makai	<b>High</b> - Most historic wildfire events were anthropogenic with easy access to wildland areas via roads or proximity to development OR natural ignition sources such as lightning or lava are prevalent. Fire prone area. High rate of ignitions or history of large scale fires and/or severe wildfire events.
	Honaunau Mauka	<b>Low</b> - Little to no natural (lightning or lava) ignition risk. No history of arson. Wildland areas absent or distant from public and/or vehicular access.
	Ho'okena	<b>Moderate</b> - Some history of wildfire, but not particularly fire prone area due to prevailing lack of fire prone conditions, weather, and vegetation type.
	Miloli'i	<b>Moderate</b> - Some history of wildfire, but not particularly fire prone area due to prevailing

		lack of fire prone conditions, weather, and vegetation type.
	Papa Bay	<b>Moderate</b> - Some history of wildfire, but not particularly fire prone area due to prevailing lack of fire prone conditions, weather, and vegetation type.
	Honomalino	<b>Moderate</b> - Some history of wildfire, but not particularly fire prone area due to prevailing lack of fire prone conditions, weather, and vegetation type.
<b>Topographical features that adversely affect wildland fire behavior</b>	Kealakekua Makai	<b>High</b> - Major feature such as box canyon, ravines, chutes, saddles, transition zones.
	Kealakekua Mauka	<b>High</b> - Major feature such as box canyon, ravines, chutes, saddles, transition zones.
	Captain Cook Makai	<b>High</b> - Major feature such as box canyon, ravines, chutes, saddles, transition zones.
	Captain Cook Mauka	<b>High</b> - Major feature such as box canyon, ravines, chutes, saddles, transition zones.
	Honaunau Makai	<b>Moderate</b> - Minor features such as low or occasional hills.
	Honaunau Mauka	<b>High</b> - Major feature such as box canyon, ravines, chutes, saddles, transition zones.
	Ho'okena	<b>Moderate</b> - Minor features such as low or occasional hills.
	Miloli'i	<b>Moderate</b> - Minor features such as low or occasional hills.
	Papa Bay	<b>Moderate</b> - Minor features such as low or occasional hills.
	Honomalino	<b>Moderate</b> - Minor features such as low or occasional hills.

Table 4. Fire Environment Hazards

### Fire Protection Hazard Ratings

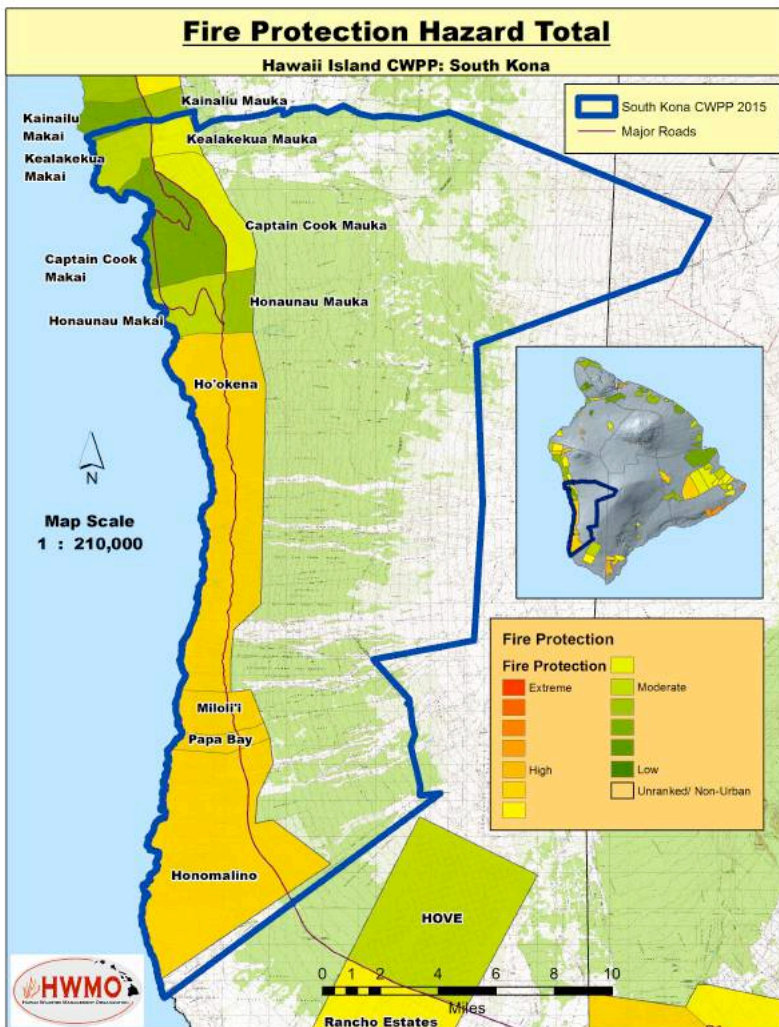


Figure 6. Fire Protection Hazard Total Map

South Kona Fire Protection Hazards		
Specific Hazard	Subdivision	Hazard Rating
Water source availability	Kealakekua Makai	<b>Moderate</b> - Non-pressurized water source availability (offsite or draft location) or dipsite. Homes on catchment water have fire-hose hookups.
	Kealakekua Mauka	<b>Moderate</b> - Non-pressurized water source availability (offsite or draft location) or dipsite. Homes on catchment water have fire-hose hookups.
	Captain Cook Makai	<b>Low</b> - Pressurized water source availability. 500 GPM less than 1000 ft spacing.
	Captain Cook Mauka	<b>Moderate</b> - Non-pressurized water source availability (offsite or draft location) or dipsite. Homes on catchment water have fire-hose hookups.
	Honaunau Makai	<b>Moderate</b> - Non-pressurized water source availability (offsite or draft location) or dipsite. Homes on catchment water have fire-hose hookups.
	Honaunau Mauka	<b>Moderate</b> - Non-pressurized water source availability (offsite or draft location) or dipsite. Homes on catchment water have fire-hose hookups.
	Ho'okena	<b>High</b> - Water unavailable, or offsite water more than 20 minute round trip.
	Miloli'i	<b>High</b> - Water unavailable, or offsite water more than 20 minute round trip.
	Papa Bay	<b>High</b> - Water unavailable, or offsite water more than 20 minute round trip.
Response time	Honomalino	<b>High</b> - Water unavailable, or offsite water more than 20 minute round trip.
	Kealakekua Makai	<b>Low</b> - Within 15 minutes
	Kealakekua Mauka	<b>High</b> - Greater than 30 minutes
	Captain Cook Makai	<b>Low</b> - Within 15 minutes
	Captain Cook Mauka	<b>High</b> - Greater than 30 minutes
	Honaunau Makai	<b>Low</b> - Within 15 minutes
	Honaunau Mauka	<b>Low</b> - Within 15 minutes
	Ho'okena	<b>Moderate</b> - 16-30 minutes
	Miloli'i	<b>Moderate</b> - 16-30 minutes
Fire Station Proximity	Papa Bay	<b>Moderate</b> - 16-30 minutes
	Honomalino	<b>Moderate</b> - 16-30 minutes
	Kealakekua Makai	<b>Moderate</b> - 6-10 miles
	Kealakekua Mauka	<b>Low</b> - Less than 5 miles
	Captain Cook Makai	<b>Low</b> - Less than 5 miles
	Captain Cook Mauka	<b>Low</b> - Less than 5 miles
	Honaunau Makai	<b>Moderate</b> - 6-10 miles
	Honaunau Mauka	<b>Low</b> - Wind rarely (less than 10% of time) exceeds 15 mph. Protection from predominant winds. <sup>1</sup>
	Ho'okena	<b>High</b> - More than 10 miles
Fire department structural training and expertise	Miloli'i	<b>High</b> - More than 10 miles
	Papa Bay	<b>High</b> - More than 10 miles
	Honomalino	<b>High</b> - More than 10 miles
	Kealakekua Makai	<b>Low</b> - Large fully paid fire department with personnel that meet NFPA or NWCG training requirements and have adequate equipment.
	Kealakekua Mauka	<b>Low</b> - Large fully paid fire department with personnel that meet NFPA or NWCG training requirements and have adequate equipment.
	Captain Cook Makai	<b>Low</b> - Large fully paid fire department with personnel that meet NFPA or NWCG training requirements and have adequate equipment.
	Captain Cook Mauka	<b>Low</b> - Large fully paid fire department with personnel that meet NFPA or NWCG training requirements and have adequate equipment.
Honaunau Makai	<b>Low</b> - Large fully paid fire department with personnel that meet NFPA or NWCG training requirements and have adequate equipment.	
Honaunau Mauka	<b>Low</b> - Large fully paid fire department with personnel that meet NFPA or NWCG training requirements and have adequate equipment.	
Ho'okena	<b>Low</b> - Large fully paid fire department with personnel that meet NFPA or NWCG training requirements and have adequate equipment.	

	Miloli'i	<b>Low</b> - Large fully paid fire department with personnel that meet NFPA or NWCG training requirements and have adequate equipment.
	Papa Bay	<b>Low</b> - Large fully paid fire department with personnel that meet NFPA or NWCG training requirements and have adequate equipment.
	Honomalino	<b>Low</b> - Large fully paid fire department with personnel that meet NFPA or NWCG training requirements and have adequate equipment.
<b>Wildland firefighting capability of initial response agency</b>	Kealakekua Makai	<b>Moderate</b> - Limited personnel, and or equipment but with some wildland firefighting expertise and training. Smaller supply of fire apparatus in fairly good repair with some specialty equipment.
	Kealakekua Mauka	<b>Moderate</b> - Limited personnel, and or equipment but with some wildland firefighting expertise and training. Smaller supply of fire apparatus in fairly good repair with some specialty equipment.
	Captain Cook Makai	<b>Moderate</b> - Limited personnel, and or equipment but with some wildland firefighting expertise and training. Smaller supply of fire apparatus in fairly good repair with some specialty equipment.
	Captain Cook Mauka	<b>Moderate</b> - Limited personnel, and or equipment but with some wildland firefighting expertise and training. Smaller supply of fire apparatus in fairly good repair with some specialty equipment.
	Honaunau Makai	<b>Moderate</b> - Limited personnel, and or equipment but with some wildland firefighting expertise and training. Smaller supply of fire apparatus in fairly good repair with some specialty equipment.
	Honaunau Mauka	<b>Moderate</b> - Limited personnel, and or equipment but with some wildland firefighting expertise and training. Smaller supply of fire apparatus in fairly good repair with some specialty equipment.
	Ho'okena	<b>Moderate</b> - Limited personnel, and or equipment but with some wildland firefighting expertise and training. Smaller supply of fire apparatus in fairly good repair with some specialty equipment.
	Miloli'i	<b>Moderate</b> - Limited personnel, and or equipment but with some wildland firefighting expertise and training. Smaller supply of fire apparatus in fairly good repair with some specialty equipment.
	Papa Bay	<b>Moderate</b> - Limited personnel, and or equipment but with some wildland firefighting expertise and training. Smaller supply of fire apparatus in fairly good repair with some specialty equipment.
	Honomalino	<b>Moderate</b> - Limited personnel, and or equipment but with some wildland firefighting expertise and training. Smaller supply of fire apparatus in fairly good repair with some specialty equipment.
<b>Interagency Cooperation</b>	Kealakekua Makai	<b>Low</b> - Mutual aid agreements and resources available to deploy.
	Kealakekua Mauka	<b>Low</b> - Mutual aid agreements and resources available to deploy.
	Captain Cook Makai	<b>Low</b> - Mutual aid agreements and resources available to deploy.
	Captain Cook Mauka	<b>Low</b> - Mutual aid agreements and resources available to deploy.
	Honaunau Makai	<b>Low</b> - Mutual aid agreements and resources available to deploy.
	Honaunau Mauka	<b>Low</b> - Mutual aid agreements and resources available to deploy.
	Ho'okena	<b>Low</b> - Mutual aid agreements and resources available to deploy.
	Miloli'i	<b>Low</b> - Mutual aid agreements and resources available to deploy.
	Papa Bay	<b>Low</b> - Mutual aid agreements and resources available to deploy.
	Honomalino	<b>Low</b> - Mutual aid agreements and resources available to deploy.
<b>Local emergency operations group or other similar</b>	Kealakekua Makai	<b>Low</b> - Active EOG or CERT. Evacuation plan in place.
	Kealakekua Mauka	<b>Low</b> - Active EOG or CERT. Evacuation plan in place.
	Captain Cook Makai	<b>Low</b> - Active EOG or CERT. Evacuation plan in place.
	Captain Cook Mauka	<b>Low</b> - Active EOG or CERT. Evacuation plan in place.
	Honaunau Makai	<b>Low</b> - Active EOG or CERT. Evacuation plan in place.
	Honaunau Mauka	<b>Low</b> - Active EOG or CERT. Evacuation plan in place.
	Ho'okena	<b>Low</b> - Active EOG or CERT. Evacuation plan in place.
	Miloli'i	<b>Low</b> - Active EOG or CERT. Evacuation plan in place.
	Papa Bay	<b>Low</b> - Active EOG or CERT. Evacuation plan in place.
Honomalino	<b>Low</b> - Active EOG or CERT. Evacuation plan in place.	
<b>Community planning practices</b>	Kealakekua Makai	<b>Moderate</b> - Have voluntary ordinances for fire safe practices. Local officials have an understanding of appropriate wildfire mitigation strategies. Fire department has limited input to fire safe planning and development efforts and limited enforcement. Residents

and ordinance		are mostly compliant.
	Kealakekua Mauka	<b>Moderate</b> - Have voluntary ordinances for fire safe practices. Local officials have an understanding of appropriate wildfire mitigation strategies. Fire department has limited input to fire safe planning and development efforts and limited enforcement. Residents are mostly compliant.
	Captain Cook Makai	<b>Moderate</b> - Have voluntary ordinances for fire safe practices. Local officials have an understanding of appropriate wildfire mitigation strategies. Fire department has limited input to fire safe planning and development efforts and limited enforcement. Residents are mostly compliant.
	Captain Cook Mauka	<b>Moderate</b> - Have voluntary ordinances for fire safe practices. Local officials have an understanding of appropriate wildfire mitigation strategies. Fire department has limited input to fire safe planning and development efforts and limited enforcement. Residents are mostly compliant.
	Honaunau Makai	<b>Moderate</b> - Have voluntary ordinances for fire safe practices. Local officials have an understanding of appropriate wildfire mitigation strategies. Fire department has limited input to fire safe planning and development efforts and limited enforcement. Residents are mostly compliant.
	Honaunau Mauka	<b>Moderate</b> - Have voluntary ordinances for fire safe practices. Local officials have an understanding of appropriate wildfire mitigation strategies. Fire department has limited input to fire safe planning and development efforts and limited enforcement. Residents are mostly compliant.
	Ho'okena	<b>Moderate</b> - Have voluntary ordinances for fire safe practices. Local officials have an understanding of appropriate wildfire mitigation strategies. Fire department has limited input to fire safe planning and development efforts and limited enforcement. Residents are mostly compliant.
	Miloli'i	<b>Moderate</b> - Have voluntary ordinances for fire safe practices. Local officials have an understanding of appropriate wildfire mitigation strategies. Fire department has limited input to fire safe planning and development efforts and limited enforcement. Residents are mostly compliant.
	Papa Bay	<b>Moderate</b> - Have voluntary ordinances for fire safe practices. Local officials have an understanding of appropriate wildfire mitigation strategies. Fire department has limited input to fire safe planning and development efforts and limited enforcement. Residents are mostly compliant.
Honomalino	<b>Moderate</b> - Have voluntary ordinances for fire safe practices. Local officials have an understanding of appropriate wildfire mitigation strategies. Fire department has limited input to fire safe planning and development efforts and limited enforcement. Residents are mostly compliant.	
Community fire-safe effort and programs already in place	Kealakekua Makai	<b>Moderate</b> - Limited provision of or interest in educational efforts. Fire Department or local group does some limited prevention and public education.
	Kealakekua Mauka	<b>Moderate</b> - Limited provision of or interest in educational efforts. Fire Department or local group does some limited prevention and public education.
	Captain Cook Makai	<b>Moderate</b> - Limited provision of or interest in educational efforts. Fire Department or local group does some limited prevention and public education.
	Captain Cook Mauka	<b>Moderate</b> - Limited provision of or interest in educational efforts. Fire Department or local group does some limited prevention and public education.
	Honaunau Makai	<b>Moderate</b> - Limited provision of or interest in educational efforts. Fire Department or local group does some limited prevention and public education.
	Honaunau Mauka	<b>Moderate</b> - Limited provision of or interest in educational efforts. Fire Department or local group does some limited prevention and public education.
	Ho'okena	<b>Moderate</b> - Limited provision of or interest in educational efforts. Fire Department or local group does some limited prevention and public education.
	Miloli'i	<b>Moderate</b> - Limited provision of or interest in educational efforts. Fire Department or local group does some limited prevention and public education.
	Papa Bay	<b>Moderate</b> - Limited provision of or interest in educational efforts. Fire Department or local group does some limited prevention and public education.
	Honomalino	<b>Moderate</b> - Limited provision of or interest in educational efforts. Fire Department or local group does some limited prevention and public education.

Table 5. Fire Protections Hazards



## Community Concerns & Recommendations

The South Kona Community Input meeting was held at the Konawaena Elementary School on November 5<sup>th</sup> from 6-8pm and included a short presentation followed by a facilitated public input process. Community members, Kamehameha Schools land managers, a rancher, former politician, a former wildland firefighter, and HFD firefighters were split into two groups where they shared their wildfire concerns and recommended actions during the input process. Each group presented to the whole group and then each person voted with 3 stickers on their priority concerns/actions. Then each person was given another 3 stickers to place on the enlarged South Kona map for their most valued areas or community resources (home, park, cultural site, etc.) The community input was organized in two ways, first by Cohesive Strategies and second by Subject Area.

### Input Organized According to Cohesive Strategy

The National Cohesive Wildland Fire Management Strategy (or Cohesive Strategy) encourages communities to develop a dynamic approach to planning for, responding to, and recovering from wildland fires. It provides a framework for wildfire-related discussion, efforts, and goals across the United States. The overarching national strategy is further divided into three regions for tighter collaboration and coordination in each area. Hawai'i falls into the Western Region that delineates its goals into the following categories:

- Restore and Maintain Landscapes
- Fire-Adapted Communities
- Improve Wildfire Response

The results of the public meeting have been organized according to this framework to mesh with this national planning strategy. The following figure and tables depict the results relative to the Cohesive Strategy. The pie chart is based on the number of votes each community member cast for each concern/recommendation: 57% of the community concerns and recommendation votes focused on the Cohesive Strategy “Fire Adapted Communities,” 39% on “Improving Wildfire Response,” and 4% of votes for “Restore and Maintain Landscapes.” These votes and percentages helped determine the priority level of the action item suggested within Tables 6-11.



*Photo 3. South Kona participants identify wildfire concerns and prioritize recommended actions*

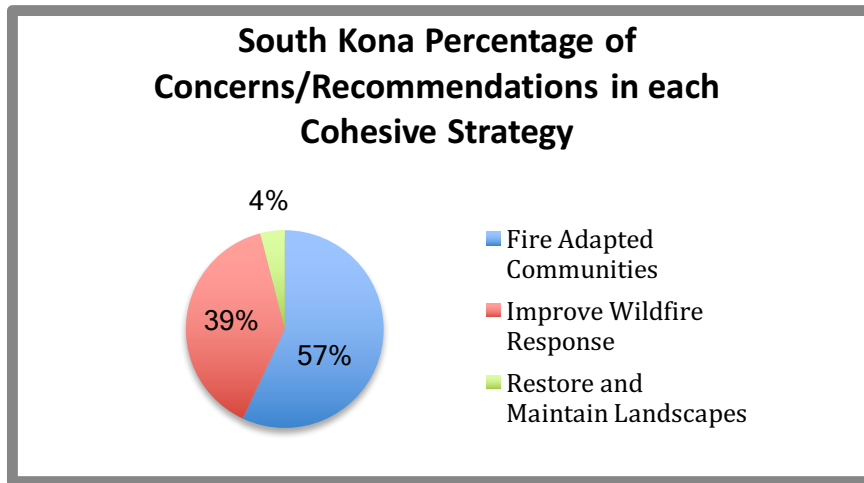


Figure 7. Percentage of Concerns/Recommendations in each Cohesive Strategy

### Input per Cohesive Strategy Category

The following tables articulate all concerns and recommended actions that were provided at the input meetings. All input was put into priority order by participants.

Public Input – Prioritized Concerns and Recommended Actions Category: Fire Adapted Communities	
Wildfire Concern (in priority order)	Recommended Action
Fuels Management <ul style="list-style-type: none"> <li>Overgrown large properties</li> <li>Adjacent landowners not managing fuels</li> </ul>	<ul style="list-style-type: none"> <li>Create fuel abatement legislation and enforcement</li> <li>Develop a permit process requirement for vegetation maintenance responsibility</li> <li>Conduct outreach to landowners, farmers, lessees, CTAHR, Ag. Coops/groups, and developers</li> </ul>
Legislation/Enforcement/Firefighter Capacity	<ul style="list-style-type: none"> <li>Work to develop HFD enforcement capability for fuel abatement violations</li> </ul>
Education/Outreach	<ul style="list-style-type: none"> <li>Conduct outreach to landowners, farmers, lessees, CTAHR, Ag Coops/groups, developers about fuels management violations and wildfire threat/issues.</li> </ul>
Roadside ignitions <ul style="list-style-type: none"> <li>In urban &amp; rural areas</li> <li>Unknown causes</li> </ul>	<ul style="list-style-type: none"> <li>Provide ongoing wildfire training for HFD</li> <li>Increase/Improve roadside vegetation treatment</li> <li>Conduct more thorough investigations of ignitions</li> </ul>
Squatters starting fires in Kailua sites	<ul style="list-style-type: none"> <li>Cooperation between landowners, agencies</li> <li>Provide wildfire education program for squatter community</li> </ul>
Urban expectations in rural areas for firefighter capacity	<ul style="list-style-type: none"> <li>Did Not Answer (Education/Outreach??)</li> </ul>

Table 6. Public Input Fire Adapted Communities Cohesive Strategy

Public Input – Prioritized Concerns and Recommended Actions Category: Improve Wildfire Response	
Wildfire Concern (in priority order)	Recommended Action
Firefighter Capacity <ul style="list-style-type: none"> <li>Off-road capabilities limited for HFD</li> </ul>	<ul style="list-style-type: none"> <li>Seek funding for appropriate equipment</li> <li>Solicit donations of equipment from federal programs (auctions,</li> </ul>

(Can't go up mauka side: Telephone Exchange Rd., Tobacco Rd., Filipino Clubhouse Rd., etc. + makai side also difficult)	programs for local firefighting agencies)
<b>Wildfire Ignitions</b>	
<ul style="list-style-type: none"> <li>Multiple roadside ignitions in urban &amp; rural areas</li> </ul>	<ul style="list-style-type: none"> <li>Offer ongoing wildfire training for HFD</li> <li>Increase/Improve roadside vegetation treatment</li> </ul>
<ul style="list-style-type: none"> <li>Locating fire ignition sources on substandard roads</li> </ul>	<ul style="list-style-type: none"> <li>Invest in specific technology (i.e. drones) to assist with ignition locating</li> </ul>
<b>Firefighter Access to Water</b>	
<ul style="list-style-type: none"> <li>Limited water supply for mauka fires (too long of a response time; No water between Ho'okena and HOVE - isolation issue)</li> </ul>	<ul style="list-style-type: none"> <li>Funding</li> </ul>

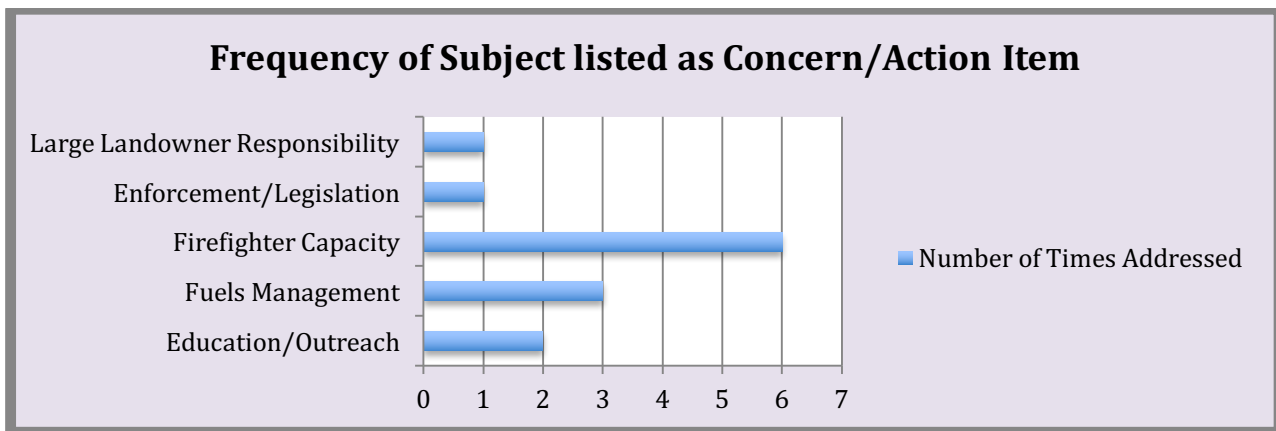
**Table 7.** Public Input Improve Wildfire Response Cohesive Strategy

Public Input – Prioritized Concerns and Recommended Actions	
Category: Restore and Maintain Landscapes	
<b>Wildfire Concern (in priority order)</b>	<b>Recommended Action</b>
<ul style="list-style-type: none"> <li>Largest fires have been mauka in dryland forest areas</li> </ul>	<ul style="list-style-type: none"> <li>Did Not Answer (diptanks, etc.??)</li> </ul>

**Table 8.** Public Input Restore and Maintain Landscapes Cohesive Strategy

### Input Organized by Subject Matter

The community input results were tallied and organized by subject area to aid the development of a priority projects list. The graph below demonstrates how many times each topic was addressed or referred to within the participant input. The most frequently discussed issue was Firefighter Capacity, followed by Fuels Management, Education/Outreach and then Large Landowner Responsibility and Enforcement/Legislation. See tables above for participant concern/recommendation details related to each subject.



**Figure 8.** Frequency of Subject listed as Concern/Action Item

## Recommended Next Steps

The South Kona updated action plan was developed through an analysis of the issues identified in the risk assessment, community and agency input, and through a review of other Community Wildfire Protection Plans. Private landowners, Federal, State, and County agencies and were invited to submit projects that provide protection and reduce risk. The community concerns and action items listed above served as the basis for the projects listed below that will guide hazard reduction efforts in the future.

Landowners and agencies are invited to continue to submit projects that provide community protection and mitigate wildfire risk. HWMO and the Big Island Wildfire Coordinating Group intend to meet annually to evaluate progress on projects and mutually agree on treatment priorities. Additional projects will be displayed as appendices in updated versions of this plan.

The following table lists initial projects suggested to address community hazard reduction priorities.

### Immediate Projects (1-3 Years) In Priority Order:

Proposed Project	Anticipated Cost	When	Lead
1. Improve wildland firefighting capacity (training, funding, ignition source investigations, solicit equipment donations)	\$300,000 Cooperative Funding	2016	HFD, Volunteer Fire Depts., Communities
2. Fuels Management (Legislation, Education, Enforcement; Roadside vegetation management)	\$500,000 Cooperative Funding	2016-2018	Community, HWMO
3. Improve firefighter access to water resources (Funding? For diptanks??)	\$200,000??	2016-2018	Multiple Agencies (federal, state, county, private)
4. Wildfire Education (Outreach to landowners, farmers, lessees, CTAHR, Ag groups/coops, developers)	Cooperative Funding \$50,000	2015-2017	HWMO/Private

*Table 9. Next Steps: Immediate Projects*

The following 2010 project list was revisited by participants of the 2014-15 CWPP update process, with projects that remain a priority noted within each table.

Original South Kona Projects List 2010						
Community, structure, or area at risk	Project	Agency	Funding Needs	Time table	Community Recommendation	Continues to be a priority during 2014-15 update?
South Kona	Creation of pre-staged static water tanks	Multiple Agencies: federal, state, county, and private	Cooperative Funding	2006 - 2007	Yes	Yes
South Kona	Improved communication between emergency officials and residents	Multiple Agencies: OVCA, County	Cooperative Funding	2006 - 2007	Yes	Yes

	regarding evacuation					
South Kona	Creation of secondary emergency ingress/egress roads	Multiple Agencies: federal, state, county, and private	Cooperative Funding	2006 - 2007	Yes	Yes
South Kona	Street signage identifying evacuation routes	Multiple Agencies: federal, state, county, and private	Cooperative Funding	2006 - 2007	Yes	Yes
South Kona	Reduction of fuel load along roadsides	Private	Cooperative Funding	2006 - 2007	Yes	Yes
South Kona	Reduction of invasive species	HAVO	Cooperative Funding	2006 - 2007	Yes	Yes
South Kona	Continued fire prevention education and outreach	Multiple agencies: federal, state, county, and private	Cooperative Funding	2006 - 2007	Yes	Yes
South Kona	Strengthening of County fire ordinances	Multiple agencies	Cooperative Funding	2006 - 2007	Yes	Yes
Lorenzo Road	Reduction of fuel load along roadsides	Multiple agencies	Cooperative Funding	2006 - 2007	Yes	Yes
Lorenzo Road	Continued fire prevention education and outreach	Multiple agencies	Cooperative Funding	2006 - 2007	Yes	Yes

**Table 10.** *Original South Kona Projects List 2010*

## Plan Implementation and Maintenance

Because of the non-regulatory nature of the CWPP, the relevance and effectiveness of the South Kona CWPP and its subsequent updates rely heavily upon community initiative and agency involvement. Expertise, technical support, and implementation assistance will be provided by the appropriate agencies and organizations involved in fire issues in the South Kona Area, and area residents are urged to contribute their time and effort to implement the actions they self-identified in South Kona CWPP planning and update processes.

Hawaii Wildfire Management Organization, in cooperation with the Big Island Wildfire Coordinating Group, is available to provide technical support, identify and coordinate funding when possible, and serve as a centralized resource for wildfire risk reduction efforts in South Kona. Together, representatives will continue to prioritize and recommend funding for projects, document the successes and lessons learned from those projects, and evaluate and update the CWPP as needed.

Hawaii Wildfire Management Organization will provide outreach and educational programs to youth and adults through school programs, community events, homeowners/community association programs, and workshops in the coming year to kickstart additional community involvement in implementing the actions identified in this plan.

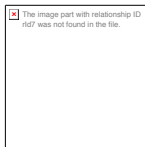
Many South Kona CWPP action items will require continuing support for wildfire risk mitigation projects. This will involve actively pursuing funding for projects, staying informed and in contact with one another, and updating the CWPP regularly so that it remains a “living” document. Continuing to build community awareness of these issues and actions will assist with fostering individual and community investment in projects.

The following County, State, and Federal representatives have a high level of interest in the protection of the South Kona area from wildfire, and have reviewed and support this CWPP. Contact information for principal government stakeholders is listed below.

### County:

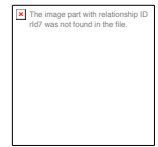
#### **Hawaii Fire Department**

Darren Rosario, Fire Chief  
25 Aupuni St. #2501 Hilo, HI 96720  
(808) 932-2903



#### **Hawaii County Civil Defense**

Darryl Oliveira, Administrator  
920 Ululani St. Hilo, HI 96720  
(808) 935-0031  
doliveira@co.hawaii.hi.us



### State:

#### **Department of Land and Natural Resources, Division of Forestry and Wildlife**

Lisa J. Hadway, Administrator  
1151 Punchbowl St., Room 325, Honolulu, HI 96813  
(808) 587-4173  
Lisa.J.Hadway@hawaii.gov



### Federal:

#### **National Park Service**

James Courtright, Fire Management Officer  
Hawaii Volcanoes National Park & Pacific Islands Network  
(808) 985-6042  
James\_Courtright@nps.gov

