

**Orange County**

# ***FIRESTORM 1993***

***October 26–November 4***



A Report to the  
County Board of Supervisors



Larry J. Holms  
Director of Fire Services

Orange County

# FIRESTORM 1993

*October 26—November 4*



*This report is dedicated to all the men and women who protected and served others during the firestorms that struck Orange County in 1993.*

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# *Foreword*

The response to the Stagecoach, Laguna, and Ortega firestorms showed how people and organizations—private businesses; local, state and federal governments; volunteer groups; labor unions; neighborhoods; and countless individuals—can come together and support each other during a crisis. Individually each worked within his or her own area of expertise, while they all worked together for a common good.

These people and organizations came together in the finest display of community cooperation I have witnessed in my long career. There are tasks we might perform differently next time, and we'll train more to handle these type of incidents even better in the future. But the measure of our success is clear: In fires which burned over 36,000 acres, destroyed or severely damaged 469 homes, and required the evacuation of an entire city, no lives were lost. This is a remarkable achievement—an achievement of which we can all be proud.

We are not standing still feeling successful, however. Instead, we're actively working to implement important fire prevention legislation, Assembly Bill 337 and Senate Bill 1841. Our newly formed Wildland-Urban Interface Task Force is working to produce model development and retrofit standards and a model inspection program for the county's wildland-urban interface areas. In addition, our firefighter training programs are being modified to reflect the lessons learned from these disasters. We can pull knowledge out of the ashes of this disaster to better control and minimize the fire risk that we all know can never be completely eliminated.

Please review the following report. It discusses why wildfires are a high risk in Orange County, the events which occurred between October 26 and November 4, 1993, the county response, key issues, and lessons learned from these events. I welcome your questions.

Larry J. Holms, Director of Fire Services

# Executive Summary

Orange County's wildfire history has repeated itself for thousands of years. Factors leading to the severity of the county's wildland fires include its topography, fuels, weather, and wildland-urban interface encroachment. These disasters will continue to occur. In fact, because of continued wildland-urban encroachment, this type of disastrous wildfires are likely to increase in frequency and severity.

Aided by extreme fire weather conditions, devastating firestorms swept the county during the period of October 26 through November 4. During this time period, a total of 20 major fires in 6 Southern California counties burned out of control. Orange County Fire Department's (OCFD) involvement began with a mutual-aid request to the Green Meadow fire in Ventura County. Two OCFD strike teams were initially sent to protect the threatened Thousand Oaks Mall and remained out of county until October 31. Within six hours of the 2 strike team's commitment to the Green Meadow fire, the first of three major Orange County incidents began. Within the first half hour, 104 OCFD personnel were committed to the Stagecoach incident. At the incident's end, 506 firefighters had worked to contain the fire. Aggressive firefighting and effective incident management kept the losses at 2 homes destroyed and 27 damaged in the 750 acre fire.

At 11:50 a.m. Wednesday October 27, OCFD was faced with its second disastrous wildfire in just over 12 hours. OCFD received five 911 calls reporting a fire on Laguna Canyon Road. During this fire, mutual aid resources throughout California converged on Laguna. At the height of the fire, flames consumed an average of 45 acres and 4 homes per minute. By 4:29 p.m., October 27, the third devastating

fire in just over 16 hours struck the County as the Ortega fire threatened homes and the wildland areas off Ortega Highway in the communities of Seiver's Canyon, Rancho Carillo, and Hot Springs Canyon.

On the Laguna fire, law enforcement used both north- and southbound lanes of Pacific Coast Highway to channel bumper-to-bumper evacuation traffic out of the city: residents evacuated southward, while firefighters and their vehicles funneled in from the north. Fires hit the El Morro Mobile Home Park, the community of Emerald Bay, Skyline Drive, Canyon Acres, and the Laguna Skyline area. The winds shifted in the evening, fanning flames towards the City of Irvine. Police evacuated the community of Turtle Rock as a precaution; however, firefighters were able to stop the flames just 50 feet short of the homes.

The Laguna fire destroyed or severely damaged 441 homes, burned 14,337 acres, and caused approximately \$528,000,000 in damage. Despite the disaster's burden, the community rallied to support the emergency effort. Individuals, private businesses, civic groups, and volunteer organizations contributed time, material, and expertise.

The county activated the Emergency Operations Center (EOC) to provide a centralized site for information gathering, analysis, and dissemination to the media and the public. Continuous 24-hour staffing of EOC functions such as Public Information, Rumor Control, and EOC Operations was provided. The Chairman of the Board of Supervisors proclaimed a local emergency and requested the governor to declare a state of emergency. In response to the governor's declaration, the President of the United States declared the Laguna fire a major



disaster in Southern California, triggering the release of federal funds.

Flexibility built into the OCFD organization and the California Mutual Aid System allowed for a rapid mobilization of firefighting forces. The department's mobilization, aided by mutual aid resources, combated the multiple incidents, while the Incident Command System allowed for the effective management of these resources. The challenges presented by these fires were the most complex ever faced by the Orange County Fire Department.

Air tankers and helicopters were used to combat each of the fires that struck Orange County. These aircraft can be extremely effective in support of engines or other equipment in the initial attack phase of a wildland fire. Unfortunately, helicopter and air tanker support was unavailable in the early stages of the Stagecoach, Laguna, and Ortega incidents—a pivotal time in a wildland firefight.

The current communications system used by OCFD's Emergency Communication Center (ECC) was overwhelmed by emergency telephone calls and radio transmissions during peak periods of the fires. In a peak 1-hour period during the fires, ECC experienced a telephone call load approximately 13 times greater and a radio transmission call load approximately 10 times greater than on an average 24-hour day.

To reduce the fire threat to the community of Emerald Bay, 550 acres in the upper

Emerald Canyon watershed had been proposed for burning for the last three years. This burn was delayed due to concerns for threatened endangered species, such as the California Coastal Gnatcatcher and the Cactus Wren. Rain and prolonged periods of high fire danger conditions also reduced opportunities to conduct the burn. The canyon's prescribed burn was finally scheduled for late November, but the Laguna fire started on October 27, before the burn could be started.

As of this date, over 480 arson leads have been received by OCFD's Investigations Section on the Laguna fire and other related fires within Orange County during this firestorm period. The Laguna fire investigation remains a priority for the department and is currently considered to be an open criminal fire investigation.

Numerous lessons can be learned from these fires. OCFD established a Wildland-Urban Interface Task Force to produce three crucial documents by July, 1994: (1) a safer model development standard for the county's wildland-urban interface, (2) recommendations for retroactive mitigation measures to be taken in developed areas, and (3) a model wildland-urban interface inspection and enforcement program.

Familiarity with the county's disaster plan will ensure coordinated responses to the next disaster. We must continue to commit time and resources to regular training and periodic exercise of this disaster plan.

# Regional Risk Factors

Some of the realities of nature in California are, and always have been, violent earthquakes, severe drought, uncontrollable wildfires, pounding surf, destructive mud slides, and devastating winds. Californians live their lives with these realities, mostly ignoring them. All Orange County residents were once again reminded of these realities when devastating wildfires swept the county during the period of October 26 through November 4, 1993.

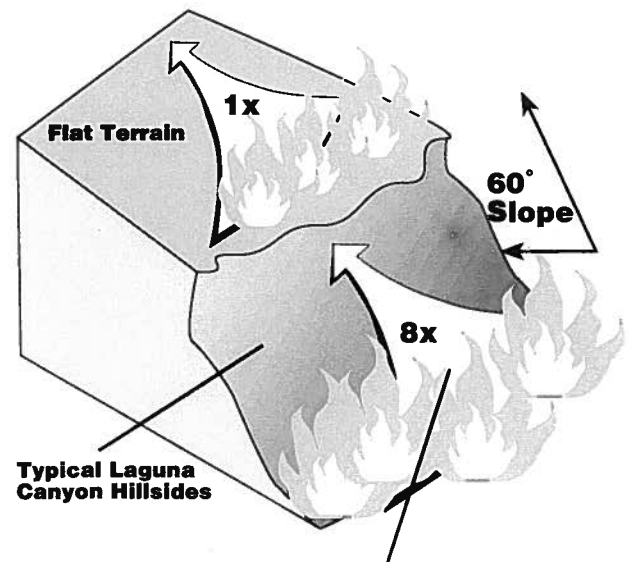
Fire has been an essential part of nature in Orange County for millennia and will continue to play a role in the future. Fire is nature's way of starting the plant life cycle over again. On average, intervals of less than 20 years exist in any given area of Orange County between devastating blazes. Factors leading to these fires include topography, fuels, weather, and wildland/urban encroachment.

## Topography

Narrow canyons, mountainside slopes, and ridgelines with curving saddles—all typical in wildland regions of Orange County—sustain and intensify fires. South-facing slopes receive maximum solar and wind exposure, making them drier and more vulnerable to rapid fire spread, while north-facing slopes receive less solar exposure and therefore retain moisture and have more dense vegetation. Eastern slopes receive early heating from the sun and early morning winds, while western slopes receive late warming and wind flows. Because of the intense sun and wind exposure, wildland fires on south-facing aspects are ignited easily and spread rapidly.

Elevation critically affects fire spread and behavior. Summer sun heats the valley bottoms. The warmed air moves rapidly

upslope, increasing the probability of rapid fire spread on a typical day between 10:00 a.m. and 6:00 p.m. A rule of thumb for firefighters is that “for every 20 percent increase in slope angle, the rate of fire spread doubles.” This rule clearly shows the danger of rapidly spreading wildfires in the county's hills and valleys: 60 degree slopes are common, and on a 60 degree slope, fire will race 8 times faster than it will on flat terrain. The steeper the slope, the faster the fire. Also, fires along ridgetops burn erratically. Heated air from fires burning upslope clashes with cooler air drafts from the other side of the hill, creating strong wind eddies and turbulence. In addition the steep, sloping hillsides and rocky ridgelines make it



*For every 20 percent increase in slope, fire spread speed doubles. On Orange County's 60 degree slopes, fire moves eight times faster than it would on flat terrain.*

difficult for fire equipment to gain access to blazes.

### **Fuels**

Common Orange County vegetation, such as chaparral thickets and coastal sage scrub, creates vast heaps of highly flammable leaves and dry wood during its normal life cycle. Many of these native plants have waxy leaves that form a flammable tinder as they dry out.

Orange County has always had an abundant supply of natural fuels, from highly-combustible grasses to heavy timber. Summer warming, especially on south-facing slopes, cures the fuels for burning. The ratio of live-to-dead growth within each plant, and the age of the plants themselves, further compound the fire problem. Plants from 1 to 20 years old are usually vigorous, with lush new growth. Most of these fuels contain 80 percent live materials and very little dead or decaying volatile fuels. These plants are somewhat fire-resistant and require so much preheating that the rate of the fire's spread slows as it burns into them.

However, major changes start to occur in plant fuels 20 years of age and older. Unlike younger plants, fuels over 20 years old often have high percentages of dried-out stems and twigs. Typically, 40 to 60 percent of plants that are over 20 years old are dead, highly volatile fuels. In fact, many areas of Orange County have fuels ranging from 50 to 100 years old. Less preheating is required as fire moves through these fuels, dramatically increasing the rate and intensity of fire spread. This is

especially true of the chaparral plants common in the county.

It is estimated that an additional 2 to 6 percent of many native plants die annually after 20 years of age. If all of the dead fuel content of vegetation more than 20 years old could be eliminated, the potential for uncontrollable wildfires would be significantly reduced. This is one of the prime reasons for fuel management programs and prescription burning of old, large, continuous fuel beds. Untouched fuel beds, many of them in protected areas such as parklands and other reserves where they have been left to grow and to die naturally, provide explosive fuel for racing flames.

### **Weather**

Weather is the most critical factor in fire behavior, as well as the most unpredictable. Long periods of low rainfall increase the amount of dead vegetation. In years of heavy rains, abundant grass growth increases the hazard of rapidly spreading fires late in the summer as these grasses dry. Freezes convert live, moist fuel into dead, dry fuel. Low humidity saps the moisture from plants, reducing both live and dead fuels to tinder.

Not only do regional weather conditions influence fire, but fire also makes its own weather. The larger the fire and the longer it burns, the greater influence it has. Microclimatic conditions caused by large fires increase ambient air temperature, lower relative humidity, and step up microclimatic winds.

### **Firefighting can increase future fire risk**

Suppressing fire on one incident can actually increase the risk of future fires in the same area. Fire departments halt many brush fires before they are allowed to burn out the dead, natural fuels which have accumulated in chaparral thickets, coastal sage scrub, and grasslands. The next fire uses that accumulation of tinder-dry fuel to quickly ignite the heavier fuels and thereby create a hotter, more suppression-resistant conflagration.

Southern California weather exacerbates these fuel problems. Six years of drought and one year of cold frost left a large accumulation of dried dead trees and shrubs. 1992's winter rains spurred the growth of grasses that were later dried by 1993's summer heat. Further dehydrated by heated winds, grasses and dead wood became ready fuel for fire.

### *Santa Ana Winds*

Wind is the most influential weather condition for fire behavior. High pressure systems over Utah and Nevada push dry air toward California. As the air passes over the Mojave Desert, it gains heat; then, funneled and compressed through the mountain passes, the heated winds accelerate. The results are the Santa Ana winds. The humidity drops precipitously and virtually any spark can ignite a fire.

Santa Anas typically begin as a high pressure system whose cool, sinking air sweeps across the Mojave Desert, then flows downward to the ocean. Along the way the winds must squeeze through narrow mountain passes and canyons, causing the air to heat and accelerate. It is not unusual for the winds to exceed 40 mph by the time they streak across the coastal lowlands to the ocean. On rare occasions, the winds briefly blow up to 100 mph, making the Santa Ana condition as powerful as a hurricane. During the Laguna fire, the OCFD remote weather stations clocked gusts up to 92 mph.

### **Wildland-Urban Interface**

Orange County's continuously growing population, expanding into the often prestigious wildland-urban interface areas, has created an acute problem. For thousands of years, wildfires have burned grasses, brush, and trees; now homes are added to the list of fuels that wildfires consume. "The hillsides are just the appetizer, the houses are the main course; they provide the bulk of the fuel." [Bill Crosby, "Our Wild Fire," *Sunset*, June 1992, 64.]

Many of the homes in Orange County, built on the edges of steep slopes or draws, with wood shake roofs, exposed wooden eaves, wooden decks, and dense flammable landscaping, contribute to the fast movement of fire. Every community with natural or naturalized vegetation and a slope change is at risk.

Again, the problem is compounded by hundreds of homes built in narrow, secluded canyons and on hillsides with dense stands of trees and brush-filled open spaces. Access into these homes is typically via narrow, winding, unmarked, dead-end, overgrown, and tree-lined streets. Firefighting is further complicated by scarce water sources with minimal capacities, low water pressures, and no backup power sources for water pumps. Also, utility poles quickly burn and fall, knocking out utilities and blocking narrow streets.



*Firefighters dousing house fires in Laguna Beach. "Nature, in chaparral and coastal sage scrub regions, is a lake of gasoline," says Richard Minnich, a fire researcher at the University of California, Riverside. "And you have to ask if it's proper to have people living in lakes of gasoline." [Andrew Muir, "A Flammable Mix of Man and Nature," *Newsweek*, 8 November 1993, 37.]*

Even if one home is made fire safe, neighboring homes can cause risk. Homes with improper brush clearance or combustible shake roofs can act as fire magnets, providing a nurturing, flammable toehold for fires that rush through the remaining neighborhood homes.

**Fire Behavior**

Wind-driven fires, such as those typically seen

during Santa Ana wind conditions, are characterized by a horizontal flame front creating tremendous air temperatures. Convection columns can carry burning material well ahead of the fire, igniting homes. This wind-driven fire front, combined with steep slopes, narrow ridgelines, and deep canyon bottoms, dramatically increases fire spread.

Given the right combination of topogra-

**Selected OC Wildfire Disasters**

Date	Area	Damage
Oct. 27, 1993	Ortega	21,384 acres burned. 19 structures destroyed.
Oct. 27, 1993	Laguna Beach	14,337 acres burned, 347 structures destroyed.
Oct. 26, 1993	Anaheim Hills	750 acres burned, 2 structures destroyed.
June 27, 1990	Carbon Canyon	6,640 acres burned.
June 30, 1989	Ortega/Riverside	6,100 acres burned. 13 structures destroyed.
Sept. 4, 1988	San Juan Capistrano	2,384 acres burned.
Sept. 9, 1987	Cleveland National Forest (Silverado Canyon)	5000 acres burned; \$2.7 million.
Aug. 25, 1985	Carbon Canyon	1,500 acres burned.
Aug. 12, 1985	Telegraph Canyon	1,440 acres burned.
Jan. 27, 1984	Modjeska Canyon	1,200 acres burned.
Oct. 9, 1982	Gypsum Canyon	16,800 acres burned. 20 structures destroyed. \$20 million worth of damages.
April 21, 1982	Anaheim	Santa Ana Wind-driven fire destroys 50 buildings, injures 10, and costs \$50 million.
Nov. 24, 1980	Indian and Trabuco Canyons	28,200 acres burned. 30 structures destroyed.
Nov. 16, 1980	Carbon Canyon	8,500 acres burned.
Oct. 28, 1980	Santa Ana River Canyon	14,873 acres burned.
Dec. 12, 1979	Boat Canyon Fire	Caused by fallen power lines, 550 acres, 1 home damage, one firefighter injured.
Oct. 24, 1978	Carbon Canyon	5,314 acres burned.
Jan. 22, 1976	San Clemente	2,400 acres burned; 12 injured; 15 houses destroyed; \$1 million.
Dec. 8, 1975	Silverado Canyon	1,700 acres burned. 7 structures destroyed.
Sept. 26, 1970	Trabuco Canyon	3,268 acres burned.
Oct. 29, 1967	Paseo Grande	48,639 acres burned; 1 killed; 46 homes destroyed; \$4.2 million.
Jan. 19, 1961	San Clemente	3,370 acres burned.
Dec. 2, 1958	San Juan Capistrano	2,500 acres burned.
Sept. 24, 1955	Laguna Beach	2,500 acres burned.
Sept. 2, 1955	La Habra Heights	1,000 acres burned.
Nov. 15, 1948	Santa Ana Canyon	45,000 acres burned.
Oct. 1, 1945	Laguna Beach	1,200 acres burned.
Nov. 8, 1943	Santa Ana Canyon	2,000 acres burned.

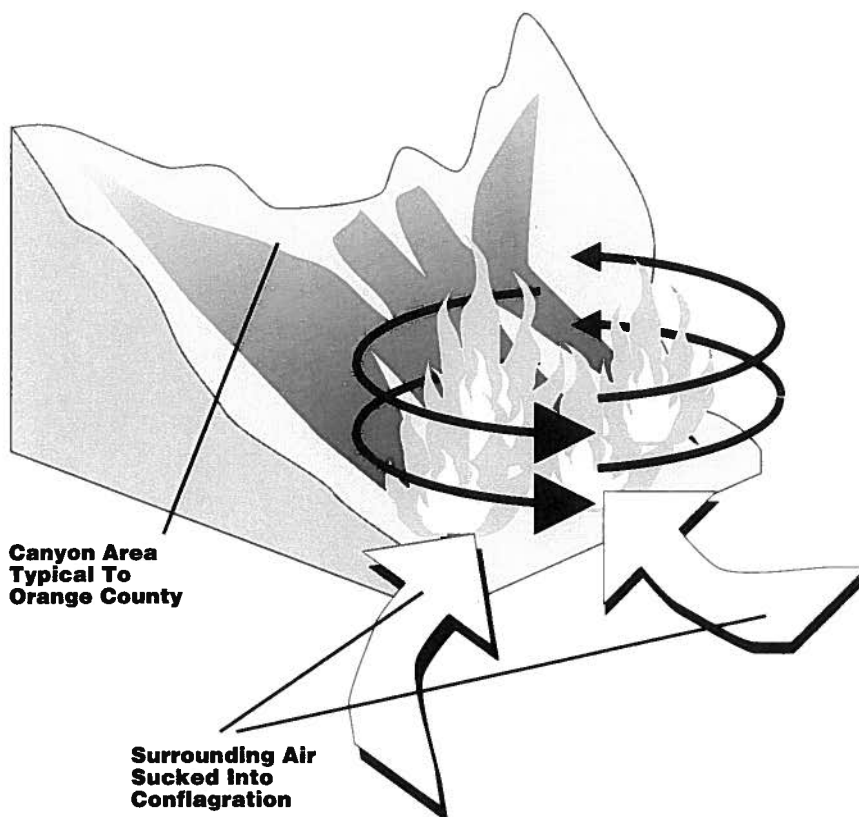
phy, weather, and fuel, a fire burns erratically. Within two minutes of ignition, fire whirls develop, flame heights jump to well over 25 feet, and soil temperatures exceed 500 degrees. Air temperatures reach 1400 degrees within four minutes. Fire can begin “spotting”—blowing burning embers of material far ahead, sometimes miles ahead, of the main fire front. Burning embers land on roofs, are held under eaves or decks, are sucked into attics, and lodge in trees. Spotting triggers full-fledged blazes; it dramatically intensifies the fire spread, making fire protection difficult or impossible.

A review of a few of the major fires in recent Orange County history, as shown on page 4, emphasizes the seriousness of the problem.

Many people forget the lessons taught by wildfires. Fire history in Orange County has been repeating itself for thousands of years. “In the first of twenty articles on the threat of

wildfire that have appeared in *Sunset* [Magazine] since 1959, the writer stated, ‘Last winter’s disastrous brush fires in Southern California taught many homeowners lessons they won’t soon forget.’ But we do forget, again and again. Not only have we been building homes and communities in wildland ever since, but we’ve rebuilt on the exact places—and often exactly the same way—where we’ve watched the fires burn. If fires are threatening more people and houses now, it’s not because the fires are any different—there are just more people and houses to threaten.” [Bill Crosby, “Our Wild Fire,” *Sunset*, June 1992, 65]

Orange County’s topography, old dry fuels, extreme fire weather conditions, and wildland-urban interface regularly cause disasters. These disasters will continue to occur. In fact, because of the continued wildland-urban encroachment, these disasters will likely increase in frequency and severity.



*A firestorm is an example of erratic, dangerous fire behavior. A firestorm can be compared to a burning tornado: a brush fire becomes encircled by quickly rotating winds, such as an updraft in a steeply walled canyon. The winds swirl faster and faster, pulling in surrounding air, further fueling the fire. These massive blazes, up to a quarter-mile in size, create their own wind patterns, which are strong enough to uproot trees and scatter embers thousands of yards ahead.*

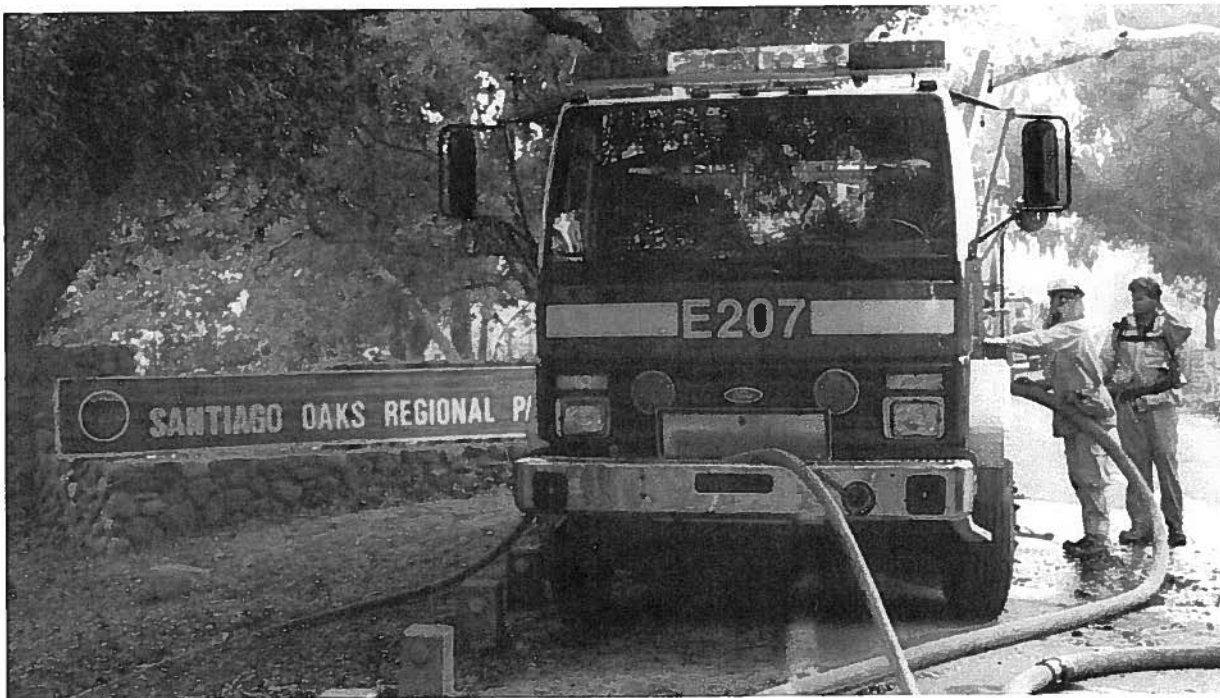
# Account of Incidents

## Tuesday, October 26

With the early identification of potentially dangerous fire weather conditions—Santa Ana winds and low humidity—the Orange County Fire Department (OCFD) prepared to fight possible wildland fires. The department's Emergency Communications Center (ECC) increased coordination with the Regional Mutual Aid Coordinator (Los Angeles County Fire Department), the California Department of Forestry (CDF), and the United States Forest Service (USFS). Increased weather reports from the department's Remote Automatic Weather Stations (RAWS) and the National Weather Service were carefully monitored. At the individual fire stations, personnel delayed

nonessential tasks to prepare for a possible wildland response.

A golfer in the Ventura County City of Thousand Oaks reported a fire at 1:19 p.m., just south of the Los Robles Golf Course's 15th and 16th greens. By the time the first fire engines arrived on scene, hot, dry winds gusting to about 20 mph had spread the blaze to five acres. It quickly raged out of control, covering 900 acres by nightfall. It eventually would engulf nearly 43,000 acres, destroying 123 structures, including 53 homes. At approximately 5:00 p.m., as part of a mutual-aid request, OCFD dispatched two strike teams—2 battalion chiefs, 10 engines, and 42 firefighters—to protect the Thousand Oaks Mall. The teams



Engine company from OCFD Station #7 in San Juan Capistrano responded to the Stagecoach blaze bordering Santiago Oaks Regional Park.

remained committed in Ventura for 6 days, until Sunday, October 31st.

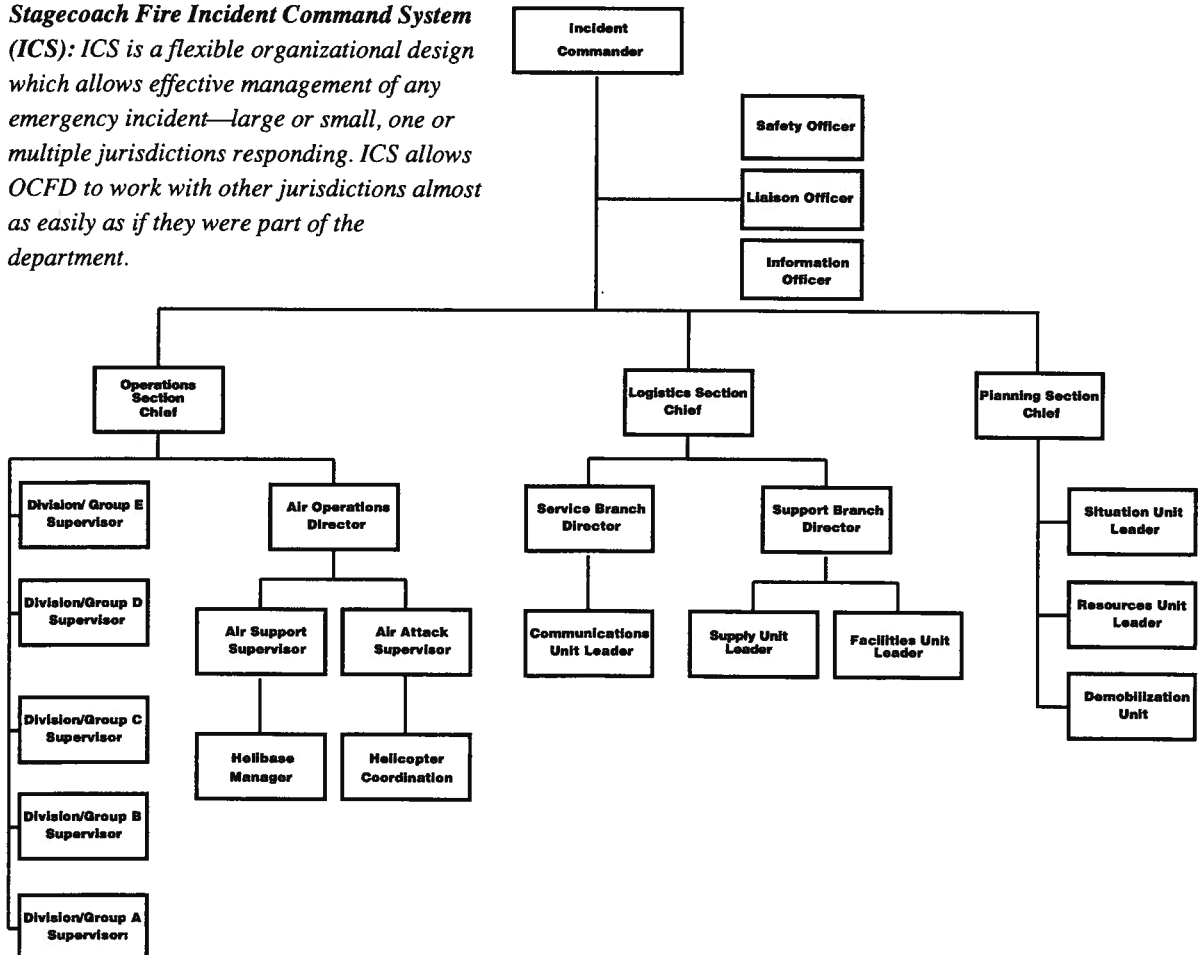
*Stagecoach fire begins*

At 11:07 p.m. on Tuesday, October 26, the Orange County Fire Department first became aware of the Stagecoach fire when OCFD units, responding to a structure fire in the City of Yorba Linda, reported a vegetation fire in the Anaheim Hills area of the City of Anaheim. The area is a mutual threat zone of the Orange County Fire Department, the Orange City Fire Department, and the Anaheim City Fire Department. (A mutual threat zone is an area approximately 1 1/2 miles wide around a department's jurisdiction in which the department may elect to respond to wildland fires to prevent the fire from growing and reaching the

department's own jurisdiction.) The OCFD dispatched the following: 1 battalion chief, 5 engines, 1 water tender, 1 hand crew, 1 patrol, and 1 paramedic unit—a total of 45 firefighting personnel—to the incident. By 11:34 p.m., 104 OCFD personnel had been dispatched and were committed to the Stagecoach incident.

As the incident continued to gain momentum due to erratic winds of up to 75 miles per hour and relative humidity of 5 to 13 percent, additional resources were systematically committed to fire suppression, command, and command staff functions. With hot embers blowing up to one-half mile ahead of the fire and no hope of stopping it, structure protection groups (strike teams assigned to the specific function of protecting structures) were assigned to potential threat areas.

**Stagecoach Fire Incident Command System (ICS):** ICS is a flexible organizational design which allows effective management of any emergency incident—large or small, one or multiple jurisdictions responding. ICS allows OCFD to work with other jurisdictions almost as easily as if they were part of the department.





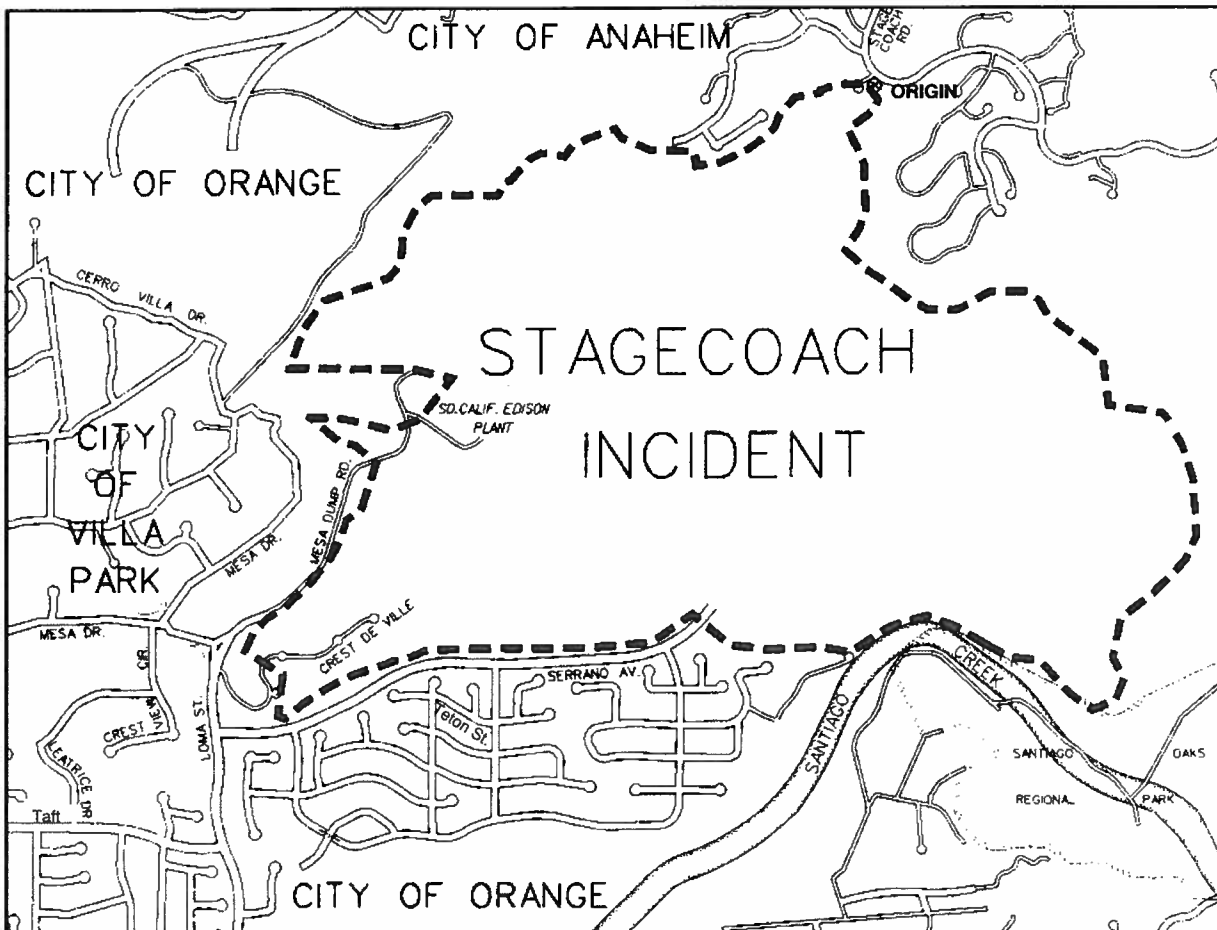
**Wednesday, October 27**

In the early morning of October 27, OCFD resources supported two blazes: two OCFD strike teams remained committed to the Green Meadow fire in Ventura County; in Anaheim Hills, a total of 8 strike teams, 16 single resource engines, 2 dozers, 4 hand crews, 2 water-dropping helicopters, 1 paramedic unit, 1 water tender, and 35 overhead personnel—a total of 243 firefighters—were still committed to the Stagecoach incident.

The weather was typical Santa Ana conditions: winds blew north to northeast at 40 mph with higher gusts up to 92 mph in the canyons. The temperature was 78 degrees with a relative humidity of 6-7 percent. The fuel moisture was 4 percent. (Fuel moisture is an estimated amount of moisture contained within

ten-hour fuels. Ten-hour fuels are heavy brush, such as manzanita.)

Numerous spectators headed down Crest De Ville Road in Orange for a better view of the Stagecoach fire just after midnight. Firefighters requested assistance from the police to keep the spectators from obstructing firefighting operations. Firefighters radioed to Incident Command (IC) that the Edison substation at the end of Mesa Dump Road would be hit by the fire in thirty minutes maximum. Strike teams patrolled the Cerro Villa neighborhood—entirely shake shingle roofs—for fallen embers. At 12:29 a.m., a strike team entered Santiago Oaks Park and deployed to protect structures, though an hour later they determined there was no threat to the park and were redeployed by the IC.



The Red Cross was contacted to open an evacuation center in anticipation of problems, although no evacuation order was needed at that time. If residents wanted to voluntarily leave, they were told to proceed to the center, but to be aware that no one would be there to meet them yet. At 1:13 a.m., flying embers began to strike residences at Canyon Drive and Mesa Drive. A strike team was assigned to the structures on the bottom of Mesa Drive since the fire was about to jump the road.

#### *Multiple fires strike*

Fire struck multiple areas almost simultaneously: At 1:20 a.m., the fast-moving fire hit firefighters at the end of Crest De Ville and burned into eucalyptus trees. At 1:27, a sheriff's deputy reported a structure fire on Canyon Drive; three minutes later an engine began battling the blaze. At 1:47, firefighters extinguished a house fire on Teton Street. At that

same minute, flames hit four houses on Crest De Ville. At 1:49, Engine 220 called for a paramedic response for a resident stricken with an asthma attack. At 1:55, several roof fires were burning.

Hand crews attacked the right flank of the fire to protect structures. Dozers cut a fire break one ridgeline away from the handcrews. At 2:02 a.m., the fire was about to hit Serrano Avenue—another neighborhood of shake shingle roofs. At 2:07, three engines on Crest De Ville, forced to deal with roof fires, couldn't keep up with the advancing fire and radioed for additional resources. At 2:21, the ECC advised the operations section chief to switch to radio channel 4-Charlie to communicate with a bulldozer operator who was trapped by fire. (The operator later escaped injury.) At 2:33, firefighters lost a house to flames at the end of a cul-de-sac on Crest De Ville; the collapsing home created numerous fire brands that blew



*View from upper Laguna Canyon Road during incident.*

downwind.

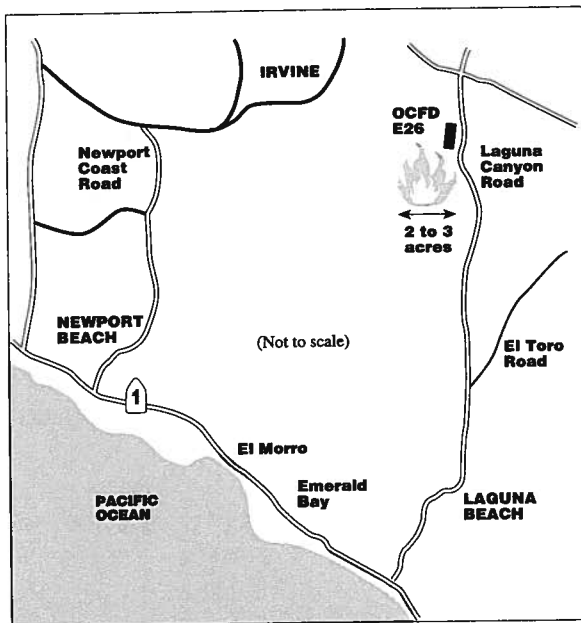
At 3:05 a.m., a strike team reported the fire would be making a run at Crestview and Leatrice Streets down to Taft. The homes' roofs were 99 percent shake shingle. The strike team called for more units in order to provide adequate structure protection. Overall, aggressive firefighting held the losses on the Stagecoach incident to 2 homes destroyed and 27 damaged.

*Laguna Fire Begins*

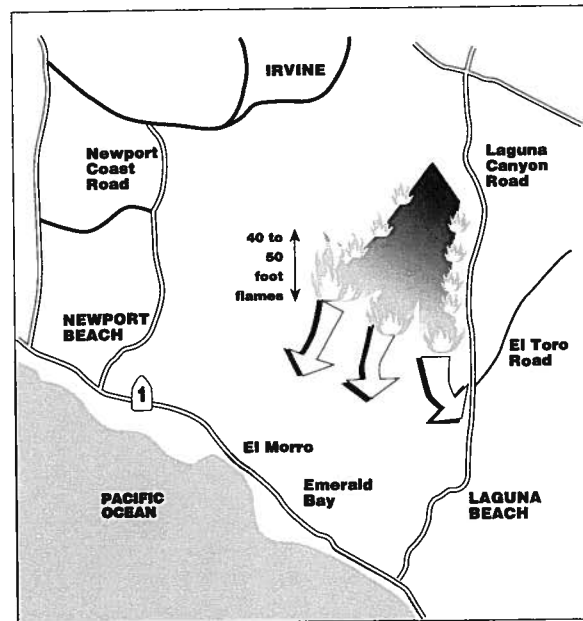
At 11:50 a.m. Orange County Fire Dispatch received five 911 calls reporting a fire on Laguna Canyon Road. Although first reports identified the fire to be on the southbound 133 Freeway north of the I-405, the location was later confirmed as south of the I-405. OCFD dispatched 1 battalion chief and 3 engines—E26, E226, and E36. At least one of the engines, E26, had just returned from the Stagecoach Incident. A fourth engine, E222, hearing the dispatch, responded. At 11:53 a.m., the La-

guna Beach Fire Department (LBFD) responded with 1 battalion chief and 2 engines. E26, approaching the site, reported a large column of smoke and requested water tenders since the fire was within inaccessible terrain. When the engine arrived on scene, the fire involved approximately 2 acres of grass and brush and was moving into heavier brush at a moderate rate of spread. The engine's captain called for traffic control from police to protect commuters on Laguna Canyon Road and to assure quick access for fire engines responding to the fire area.

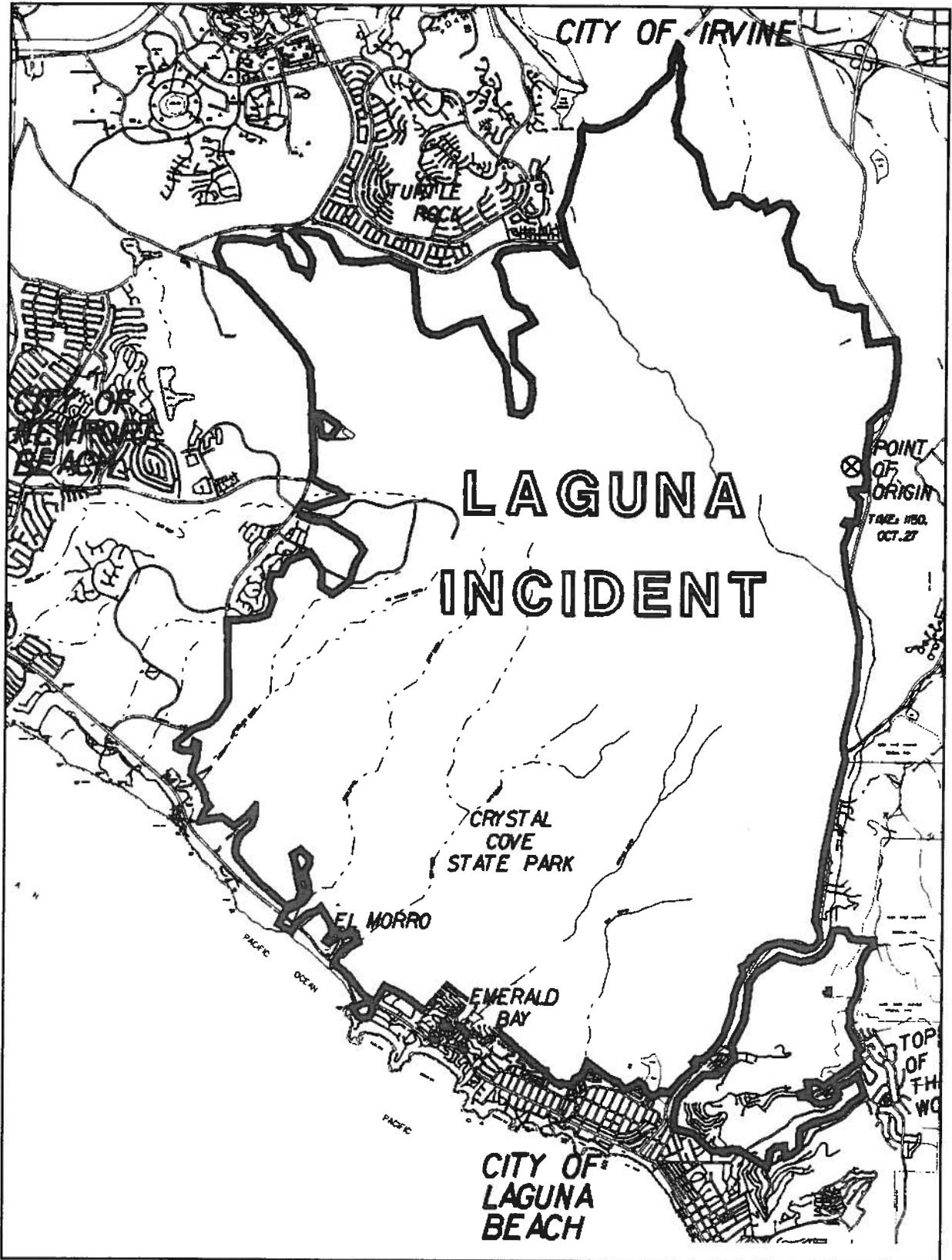
The fire had burned into medium to heavy brush, and flames began to shoot up 15 to 25 feet. The Incident Commander still hoped to hold the fire to the north side of Laguna Canyon Road at the time, but radioed to the Emergency Communications Center (ECC) that if the fire crested the hill it would severely threaten homes. A division supervisor at the head of the fire then reported that "the winds have increased significantly from the northeast

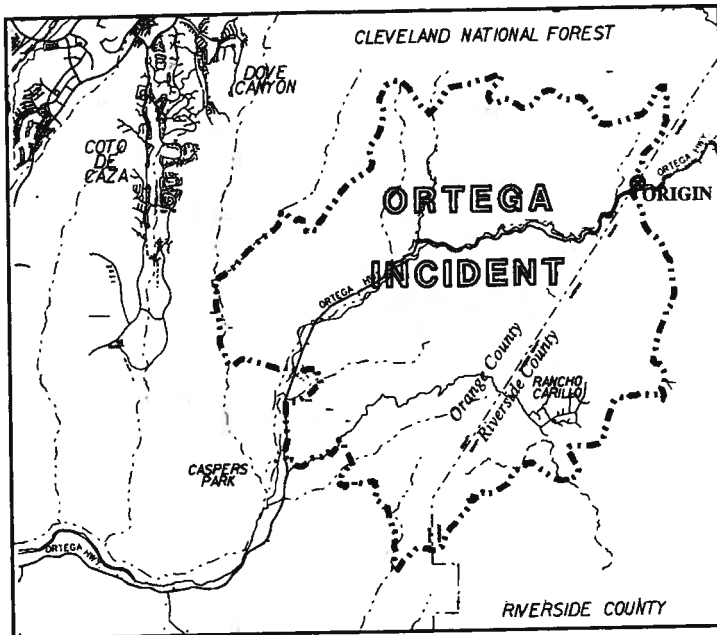


11:56 a.m. Wed.; First Response: ORCO E26 is first on scene for the fire near Laguna Canyon Road, first reported by five callers to Fire Dispatch at 11:50 a.m. At the time of response, the fire was burning two acres of light brush.



12:28 p.m. Wed.; Fire splits: The fire split into multiple fronts, moving towards Laguna, Emerald Bay, and El Morro. As the wind blew harder, the flame heights increased to 40-50 feet. Fire Operations reported that the fire is moving into the City of Laguna Beach.





*The Ortega fire began near Ortega Highway by the hands of an arsonist and quickly spread into Orange County. Initial response included firefighting resources from the U.S. Forest Service, the Orange County Fire Department, and the California Department of Forestry. OCFD resources were so severely depleted by the Stagecoach and Laguna fires that it could only provide a minimal response to the Ortega fire.*

**Excerpted report from the captain of the first engine on-scene at outbreak of the Laguna Fire:**

“My crew...had been released from the Stagecoach incident...We started to unload some of our equipment from the unit (E26) when the station alarm sounded and a dispatch came over the radio and my MDT at 1150 hours. The call was a reported vegetation fire located southbound 133 Freeway north of the I-405. The units dispatched were E26, E226, and E36...Since we were dressed in our nomex from the previous incident, we were on the road very quickly...Before reaching the freeway I heard dispatch saying there were five reports of a working fire and they would be adding additional resources to the assignment already responding...About half way down the 133 Freeway I noticed light smoke coming from the direction of Laguna Canyon Road. I reported what I saw and informed dispatch that it looked like the fire would be in [in]accessible terrain and I requested water tenders to respond...we pulled up to the fire. It appeared to have started on the side of the road and was heading south or towards the ocean...I got on the radio and reported that I had approximately two acres burning in light to medium fuels with a moderate rate of spread...I heard E222 report that the fire was about the place I was starting my operation. When I heard them on the radio I thought they might be coming North on Laguna Canyon, so I asked them to make sure the fire didn't jump the road on their side...My firefighters joined me on the right side of the engine and I gave them an order to start a progressive hoselay on the right flank of the fire. My intention was to try to make progress to the head of the fire and have the next engine take the other flank...As I was talking to E226, E36...pulled up to me. [The captain] advised me he was relieving me of command at that time, approximately two to four minutes after arriving on scene. At this time I noticed the wind begin to pick up in intensity. I also noticed the fire had moved towards some heavy brush and was growing in size...I joined my crew with a hose pack...When we put in the fourth stick of wildland hose, I ran back to the engine to get the last hose pack while my crew continued the hose lay. My engineer advised me he was low on water, so I attempted to contact the [Incident Commander] to request more hose and water...My crew and I put the final stick of hose in and finally ran out of water. I heard over the radio that this fire had great potential [size and severity] and was moving quickly...we continued to try to make progress with hand tools. This proved to be useless due to the growing intensity of the fire...”

and crews are falling behind.” The wind-driven fire quickly crossed open terrain away from Laguna Canyon Road.

#### *Air Tanker Request*

The operations section chief, concerned for threatened structures along the coast, placed a priority request to the incident commander for air tankers at 12:08 p.m.: “I think we’re going to hold it to this side of the canyon, at least as far as El Toro Road. [We need] about eight air tankers in here as soon as possible.” A few minutes later, the operations section chief again radioed: “We’re attempting to flank it right now, but it’s burning hot and fast. We’re falling behind. You copy my request for initial attack air tankers so we can knock the head out?” The air tankers, delayed by priorities from the other numerous fires burning in Southern California at the time, would not arrive until approximately 1:40 p.m., 1 hour and 32 minutes from the initial request by the incident commander.

Firefighting operations changed to a defensive mode: evacuation of the public and



*A helicopter, supporting hand crews, makes a drop on hillside fire.*

### **Evacuation of El Morro Elementary School**

After notification of evacuation, all the students returned to the classrooms from recess and lunch. Each classroom had a backpack that contained supplies and paperwork needed in evacuating students during a disaster. In the backpack was an emergency procedure notebook, student emergency contact cards, wrist bands identifying each of the students, and other items, such as story books and candy, that the teacher needs to help students cope with the emergency. The teachers placed the wrist bands on each of the students and explained the fire danger and the evacuation plan.

At some point while preparing for the evacuation, phone lines from the school were damaged. Calls could be made to the school, but no outgoing calls could be made. The principal used a phone answering machine to leave a message for parents reporting the evacuation and how they could pick up their children.

School buses arrived. Classroom after classroom filed onto the buses, starting with the youngest students. Once all the students were loaded onto buses, the principal, assisted by fire crews, searched through each of the classrooms and buildings to ensure that everyone was out. Police officers on-scene directed traffic on PCH, allowing buses to quickly leave the school. Teachers, using their own vehicles, escorted the buses to Laguna Beach High School. When certain that everyone was safely evacuated from the school, the principal left El Morro Elementary and proceeded to the high school evacuation location. As the fire later progressed into Laguna Beach, students would again be moved south to Dana Hills High School in the City of Dana Point.

positioning of fire apparatus to protect defensible structures. The objectives became to hold the fire on the north of Emerald Canyon watershed and to the west side of Laguna Canyon Road, protecting homes in Emerald Bay, El Morro, and Laguna Canyon.

The Laguna fire, soon to be the most destructive fire in Orange County history, upstaged the ongoing Stagecoach incident when the Stagecoach incident commander was directed to immediately redeploy as many resources as feasible to Laguna. The Laguna IC also requested the incident's priority for available fire apparatus and aircraft in the region be increased due to the extreme threat to structures.

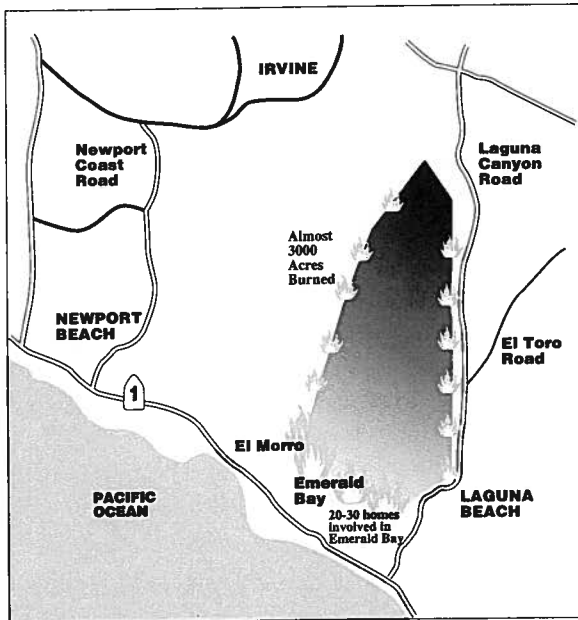
*Mutual Aid Activated*

At 12:09 p.m., the OCFD had requested a total of 90 fire engines for deployment along the wildland-urban interface in Laguna Beach. This request activated mutual aid responses through-

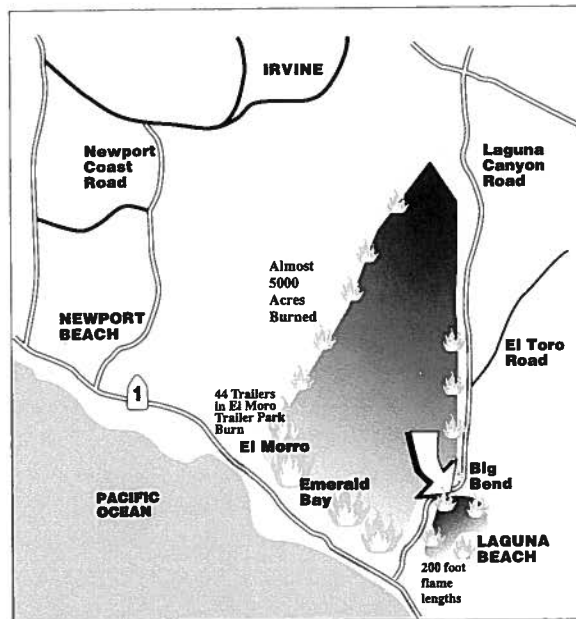
out California. During mutual aid, the Office of Emergency Services (OES) coordinated fire department resources—strike teams, hand crews, etc.—throughout the State of California. Los Angeles County Fire Department, acting as the OES Region 1 Coordinator, coordinated the movement of fire resources within the region, while the Orange County Fire Department, the Local Area Coordinator, was responsible for the coordination of all resources within Orange County. Resources immediately deployed from within Orange County included approximately 50 fire engines from Orange County Fire Department and 20 fire engines from other fire departments in the county.

At 12:28 p.m., firefighters identified three separate fronts—El Morro, Emerald Bay, and Laguna—as the fire was progressing to the coast with 40- to 50-foot high flames. In some areas flame heights reached 200 feet.

The superintendent of the Laguna school district directed all school principals at all sites



**2:23 p.m. Wed.; Emerald Bay Struck:** The fire touches Emerald Bay. There are numerous 911 reports of structure fires with trapped victims. Twenty to thirty homes are involved.



**4:03 p.m. Wed.; Fire jumps Big Bend:** Branch 1 command reports that the fire has jumped Laguna Canyon Road at Big Bend. Canyon Acres and Top of the World are immediately threatened. Fire burns through El Morro Trailer Park, LPG tanks exploding.

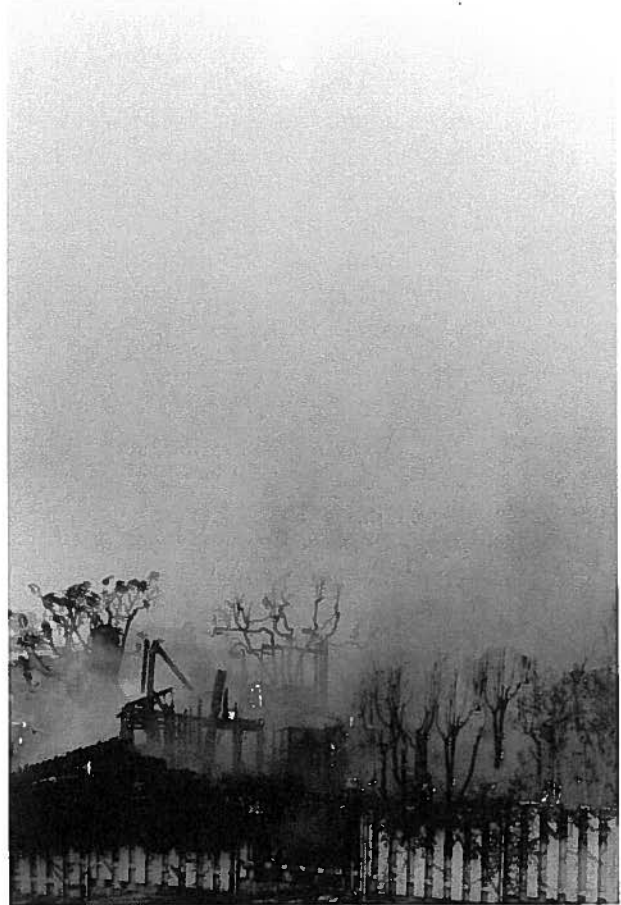
in the district to evacuate. He informed principals to prepare the students and teachers to be ready to board buses as they arrived. At 12:36 p.m., when Laguna Engine 1 requested resources to assist in the evacuation of El Morro Elementary School, the incident commander diverted 10 engines to the site.

#### *Evacuation of Laguna*

Throughout the day, the evacuation routes complemented the influx of emergency vehicles: The Laguna Beach Police Department and the Orange County Sheriff's Department, along with other local police agencies, safely conducted evacuations southbound on Pacific Coast Highway, while hundreds of emergency vehicles converged into the city from the north.

Radio conversations reflected concern that the fire would soon reach Laguna: at 12:40 p.m., the Laguna fire chief on the command channel stated, "Notify the State Parks Department that the fire is moving their way. We need several strike teams in the city to protect the wildland interface against the north end of the city. I believe the fire will bump against the city." By 12:47, the head of the fire was halfway between El Toro Road and Big Bend along Laguna Canyon Road. The fire was moving at a phenomenal rate of speed. During this short time, the top half of Emerald Canyon burned at an estimated rate of 100 acres per minute.

The fire had nearly finished destroying Emerald Canyon. The Emerald Structure Protection Group radioed for three additional strike teams to protect the mouth of the canyon, noting: "This thing [the fire] is going to blow out of Emerald Canyon." Engines 11, 219, and 224, still in the canyon, were ordered to "back out now!" Firefighters reported that homes would be lost and that the fire could reach Pacific Coast Highway. They also reported that Boat Canyon was threatened. The structural protection group transmitted to Battalion 5: "You have 60 percent shake shingle roofs in Emerald Bay ... You'll need five strike teams to be effective." At 1:37 p.m., windblown em-



*Wednesday afternoon sun barely cuts through the smoke over Laguna Beach.*

bers jumped the fire break firefighters had previously cleared. This encroachment eliminated the defensible area between the fire and the Emerald Bay homes.

#### *Air tankers begin fire retardant drops*

At 1:40 p.m., air tankers were in the area, ready to start dropping retardant. The effectiveness of air tankers was lost due to the fire's advancement into structures and the large volume of blinding smoke that obscured the pilots' visibility. Water and retardant drops could only be applied to the flanks of the fire as it progressed through each canyon toward the coast. Firefighters positioned themselves around homes and in front of the advancing firefront in an attempt to prevent burning embers from



igniting the structures. Also during this time, a firestorm was reported in Emerald Canyon.

While the Emerald Bay and El Morro evacuations of 3,500 residents progressed, the blaze jumped fuel breaks between the wildland and structures. (The fuel breaks were fuel modification areas. *Fuel modification* involves relandscaping wildland-urban interface areas with vegetation designed to resist ignition and the spread of fire. Natural brush is cleared and replanted with vegetation resistant to drought and free of flammable waxes and oils. Fuel modification areas will burn if allowed to dry out and die and are preheated by advancing wind-driven flames.) At about 2:00 p.m., the first radio reports of homes being lost in Emerald Bay were received. Fire behavior and weather conditions continued to be extreme: firefighters noted fire whirls, long-range spotting, and an extreme rate of spread. The weather

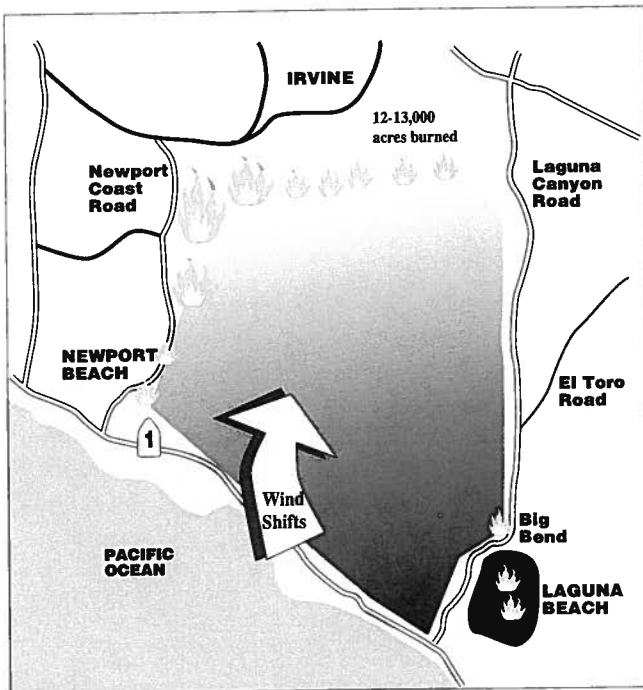
showed sustained wind speeds of 40 mph with higher gusts. The relative humidity was 6 to 7 percent and fuel moisture was 4 percent. Reports of structure fires in Emerald Bay included trapped victims.

Water pressure dropped to zero on Emerald Bay streets. The IC requested the water department to boost pressure; however, the water system was not designed with a fire of this magnitude in mind and could not be significantly increased. (Typically, a street system can deliver water for only one or two house fires at a time.)

At 2:37 p.m., due to the great numbers of fires over a wide area, the incident commander decentralized and delegated authority to division supervisors, strike team leaders, and individual company officers. The firefighters chose their own targets and decided whether to stand and fight, or move to more defensible positions. In a triage procedure, firefighters picked homes that were most worthy of water and manpower, based on building construction type and materials, fire behavior, topography, and surrounding vegetation. If time permitted, firefighters removed overhanging branches and combustible fuels from around structures, and entered homes to close windows and remove combustible draperies. Firefighters tried to keep a defensive position in front of the swiftly moving fires.

By 2:42 p.m., the IC revised incident objectives to (1) prevent loss of life in hillside residential areas; and (2) protect the Laguna Beach business district. At that time, the fire in Emerald Bay involved over 40 structures.

Recognizing the potential for mass casualties, the IC established a medical branch of the Incident Command System. The HEAR (Hospital Emergency Administrative Radio) system was activated. The HEAR system alerted all county hospitals and allowed them to report their facilities' capacity to handle fire victims. The Medical Branch Director organized 5 paramedic units and 10 ambulances requested by the IC into 5 medical groups—consisting of 1 paramedic unit and 2 ambulances



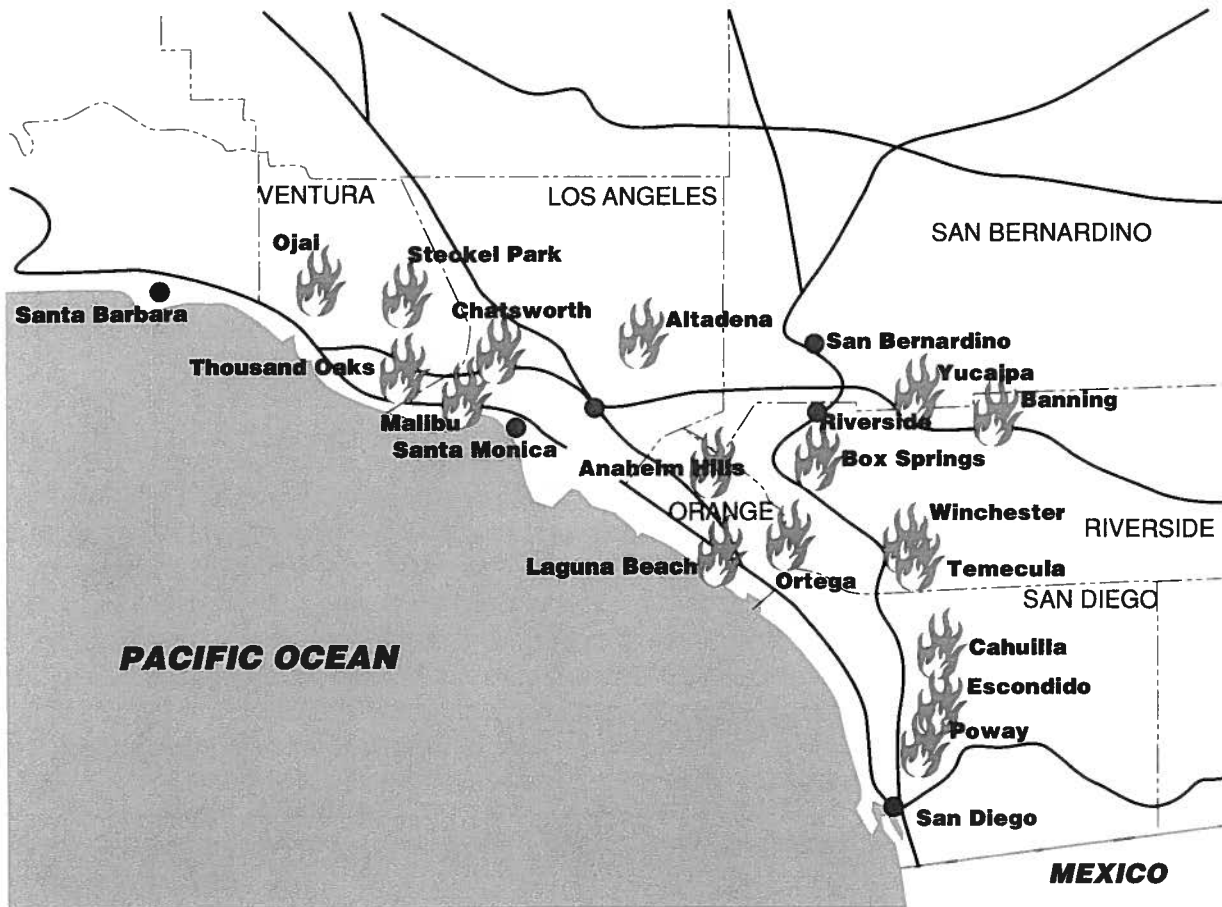
**10:00 p.m. Wed.; Irvine threatened:** In the evening, the Santa Ana winds died down and offshore prevailing winds began to blow the fire east of the main divide of coastal hills towards Irvine. By 11:10, a firing operation is completed along Newport Coast Drive from PCH to Bonita Canyon containing the north flank of the fire.

each. As the fire progressed, these medical groups were assigned geographically to treat and transport injured firefighters and to handle civilian casualties. Fortunately, there were no fatalities, and injuries, all minor, were confined to eight firefighters. Through requests from South Coast Hospital to private ambulance companies, 34 additional ambulances responded from Orange and Los Angeles Counties. These additional ambulances were escorted to South Coast Hospital where they were staged in anticipation of the possible evacuation of the hospital.

The fire finally jumped Pacific Coast Highway at Irvine Cove and threatened to jump

Laguna Canyon Road at Big Bend. Fire hit the El Morro Mobile Home Park and threatened El Morro School. Forty-four of the trailers in the mobile home park burned. Complicating firefighting efforts in the park were poorly-accessible, narrow streets, plus exploding liquid propane tanks (used to supply gas to the homes). The fire now had burned approximately 4000 acres and 49 homes had been lost in Emerald Bay.

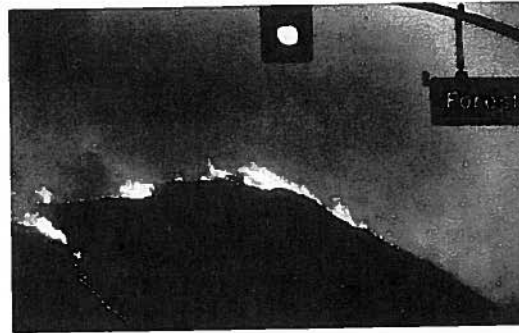
A 1.5 mile firing-out operation (controlled burn) continued along the west side of Laguna Canyon Road, attempting to eliminate fuel to slow the spread of fire. Nine engines assisted this activity: three to protect the Art Festival



*Numerous fires burned throughout the Southern California area during the time of the Laguna, Stagecoach, and Ortega fires. Multiple fires caused competition for scarce, pooled state and regional resources.*

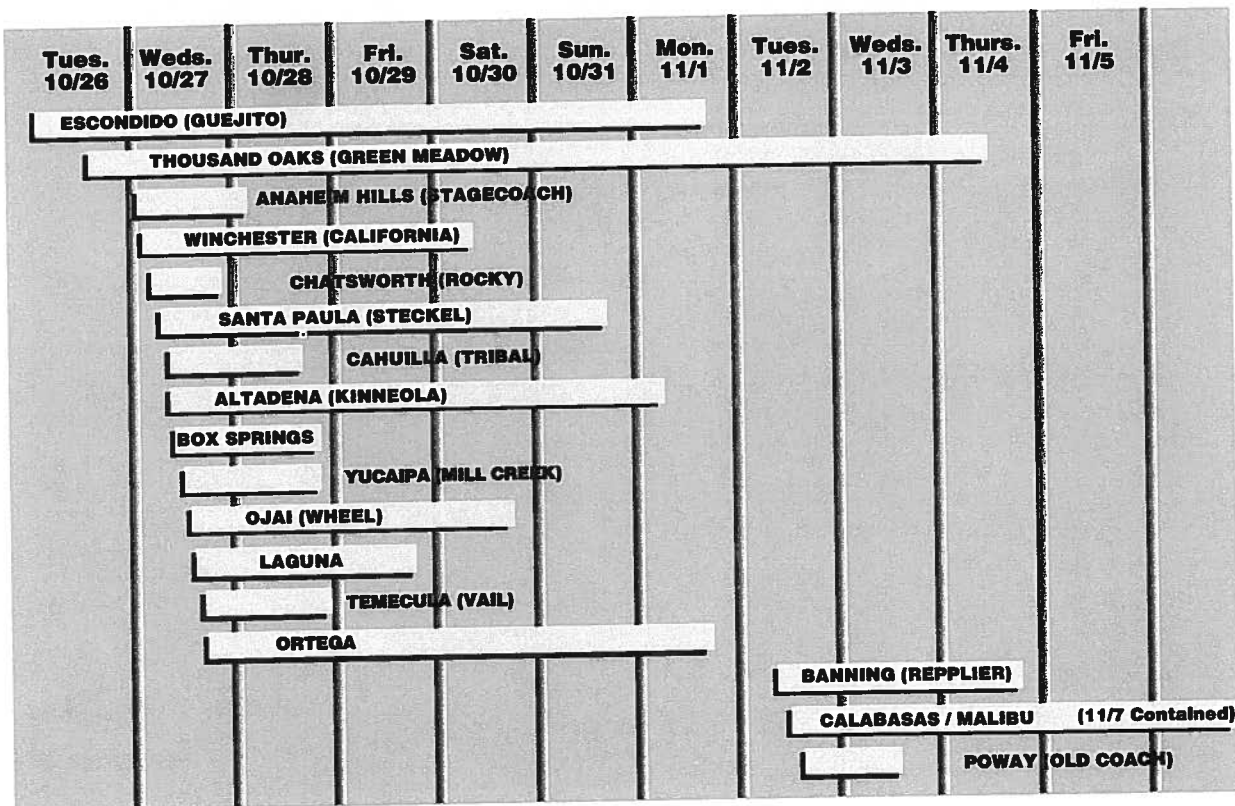
grounds and six for the Big Bend area. Despite a gallant stand by firefighters at Big Bend, the fire flashed across Laguna Canyon Road in at least six spots, leaping two-thirds of the way up the west slope. The fire spread quickly with 200-foot flame heights. A battalion chief from a helicopter above the fire, noting firewhirls and clocking the rate of spread, recommended the evacuation of downtown Laguna Beach. The sheriff and police began to evacuate downtown Laguna—approximately 24,000 people.

The fire burned through 1.25 miles of brush in 17 minutes to breach the Canyon Acres neighborhood. Air tankers, dropping retardant into Skyline Drive and upper Park Avenue, were unable to drop into Canyon Acres due to the thick smoke. Firing-out operations were begun to protect the Top of the World neighborhood. The IC implemented a strategy to defend structures located near the beach all



Courtesy of OC Register

the way to Top of the World. Firefighters set up primary lines of defense on Forest Avenue and other city streets. They set up secondary lines north of the Blue Bird Canyon. Incident Command believed that the flames could engulf 500 to 1000 more structures if the primary lines were lost. Fire overran the Incident Command Post at Thurston Intermediate School and destroyed twelve classrooms, despite air tanker drops.



A timeline shows the high number of fires burning within a short span of days. The ending dates represented by the right ends of the bars are containment dates.

*Ortega Fire Begins*

At 4:29 p.m, October 27, 1993, the third devastating fire in just over 16 hours struck the county. This time fire threatened watershed and homes in the area of the Ortega Highway.

With Orange County Fire Department resources already committed to the Stagecoach and Laguna fires, and the need to maintain coverage of department stations, the department was only able to provide a minimal response. The Orange County Fire Department initially committed 1 battalion chief, 2 engine companies, and 1 paramedic unit to the fire. United States Forest Service and California

Department of Forestry resources were deployed within minutes and the Forest Service assumed responsibility for fire control and incident management.

At the same time in the Laguna Skyline area, 211 homes were engulfed with fire and many burned down to their concrete slabs. Structures burned at a rate of 4 per minute. The fire swept through neighborhoods and began to threaten Laguna Beach High School and city hall. Police used both north- and southbound lanes of Pacific Coast Highway to channel bumper-to-bumper evacuation traffic out of the city.

<b>Statistic</b>	<b>Stagecoach</b>	<b>Laguna</b>	<b>Ortega</b>
<b>Notification Time</b>	11:07 p.m., Oct. 26, 1993	11:50 a.m., Oct. 27, 1993	4:29 p.m. Oct 27, 1993
<b>Origin</b>	Stage Coach Road at Hackamore Lane	Laguna Canyon Road (halfway between El Toro Rd. and Laguna Lakes)	Ortega Highway near the Candy Store
<b>Fire Contained</b>	8:00 p.m., Oct. 27, 1993	6:00 p.m., Oct. 28, 1993	6:00 p.m. Nov. 1, 1993
<b>Fire Under Control</b>	12:01 a.m., Oct. 28, 1993	6:00 p.m., Oct. 31, 1993	6:00 p.m. Nov. 3, 1993
<b>Fire Cause</b>	Arson	Arson	Human cause under suspicious circumstances
<b>Damage Assessment</b>			
Acres of Wildland Burned	750	14,337	21,384
Structures Destroyed/Major Damage	9	441	19
<b>Structures Saved</b>	52	1082	NA
<b>Resources used</b>			
Engines	97	345	108
Dozers	2	17	5
Hand Crews	4	11	39
Aircraft	1	30	11
Total Fire Personnel	506	1968	1891
<b>Injuries</b>			
Minor	2	8	30
Death	None	None	None

*Final Statistics for the  
Stagecoach, Laguna, and Ortega  
Fires.*

The fire jumped Park Avenue and rushed towards Temple Hills Drive, burning 27 more structures. IC established a new control objective: hold the fire north of Temple Hills Drive and Thalia Street. The Incident Command Post, overrun by flames at Thurston Intermediate School, relocated to Laguna's Main Beach.

On the Ortega fire, by 5:00 p.m., the US Forest Service had committed 6 additional engines and 1 fire control officer to the rapidly developing blaze that had already consumed over 7,000 acres. Resources from Camp Pendleton Marine Base and the California Department of Forestry in Riverside assisted in fire suppression and incident management.

By 5:30 p.m. in Laguna, firefighters commenced firing out along Newport Coast Drive to protect the City of Newport Beach and the Crystal Cove area. Huge flames whipped and

fire whirls spun through the upper canyon areas adjacent to Newport Coast Drive. The fire had destroyed 11,500 acres as of 6:30 p.m. Police evacuated the Bramalea neighborhood along Newport Coast Drive as a precautionary measure. IC wanted the fire kept out of Buck Gully to preserve the Corona Del Mar area of Newport Beach.

On the Ortega fire by 9:00 p.m., the fire had destroyed homes in Rancho Carillo, Seiver's Canyon, and Hot Springs Canyon. Emergency personnel alerted residents of Coto De Caza and Dove Canyon of the potential threat, although ultimately these areas were unscathed.

At 10:00 p.m. the winds shifted, fanning flames towards the City of Irvine. Bulldozers could not complete firebreaks quickly enough, and flames jumped existing breaks near Shady



*During the night, an Orange County Fire Department hand crew fires out along a dozer line on Bonita Canyon Road in defense of the community of Turtle Rock in Irvine. (Photo courtesy of Orange County Register.)*

Canyon. By 11:10 p.m., the firing-out operation had been completed along Newport Coast Drive from PCH to Bonita Canyon, stopping the north flank of the fire from entering Newport Beach. As a precaution, the Irvine Police Department began an evacuation of the community of Turtle Rock.

**Thursday, October 28**

At midnight, the OCFD declared the Laguna fire contained north of Temple Hills Drive, and the Stagecoach fire was declared under control. Bulldozers continued to built a firebreak between the community of Turtle Rock and Laguna Canyon Road to close off the last portion of open fire line. Upper Bommer and Shady Canyons burned, although a ranch within Bommer Canyon was protected. A thousand head of cattle in lower Bommer Canyon were herded by dozers and protected from firing-out operations. By 8:00 a.m., the firing-out operations were completed in the Turtle Rock area. No structures were lost. At 6:00 p.m., the firing-out operation reached Laguna Canyon Road. Although the fire was roughly contained at this point, it was not declared officially contained for another 24 hours due to concerns over smaller fires remaining within the perimeter. A total of 14,337 acres were burned in this fire, which was started by an arsonist.

**Malibu Incident**

As the Laguna Canyon fire drew to a close, Los Angeles County was just beginning to fight a similar wildland fire headed for homes in the

beach-front community of Malibu. This was begun by an arsonist on Tuesday, November 2, at 10:46 a.m. in the Old Topanga Canyon area of Los Angeles County. Fire departments from Orange County were again severely impacted as they responded to mutual aid requests for assistance on the Malibu fire. The fire actively burned for five days and was fully contained on Sunday, November 7, at 6:00 p.m. Total property loss came to \$208,484,786 and included 323 homes destroyed and 112 homes damaged over an 18,000 acre area. The Orange County Fire Department, through mutual aid, committed numerous resources to the Malibu fire as shown in the table below.

**OCFD Resources Sent To Malibu**

<b>Resource</b>	<b>Number</b>
Strike Teams	9
Fire Apparatus/units	54
Battalion Chiefs	9
Firefighters	180
Overhead personnel for ICS Positions	9
Dozer Strike Teams	2
Fuel Tender	1
Water Tender	2



# County Agencies' Response

## County EOC Activation

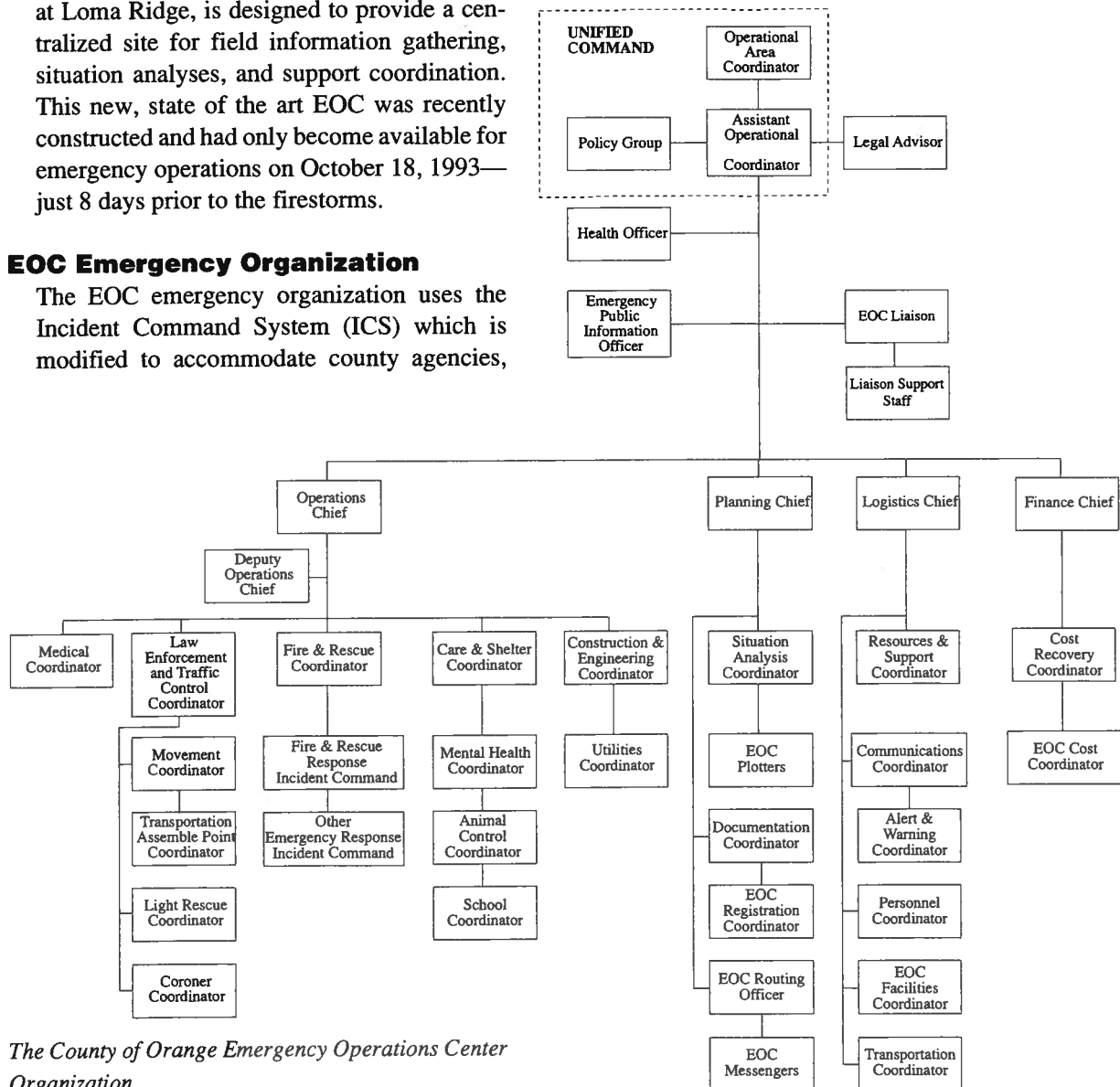
The County activated the Emergency Operations Center (EOC) on October 27, 1993, at 2:42 p.m. to support firestorm emergency operations. The EOC, located in the City of Orange at Loma Ridge, is designed to provide a centralized site for field information gathering, situation analyses, and support coordination. This new, state of the art EOC was recently constructed and had only become available for emergency operations on October 18, 1993—just 8 days prior to the firestorms.

departments, and supporting entities in a unified organization to respond to major emergencies and/or disasters.

The EOC is organized to reflect the five functional sections of the ICS: Policy Group,

## EOC Emergency Organization

The EOC emergency organization uses the Incident Command System (ICS) which is modified to accommodate county agencies,



The County of Orange Emergency Operations Center Organization



Operations, Planning, Logistics, and Finance.

- The Policy Group consists of the Board of Supervisors, County Administrative Officer, and County agency directors. They provide for overall direction and control of the county's emergency response and recovery efforts. Advisors to the Policy Group include the County Health Officer, the Public Information Officer (PIO), and the Emergency Management Division (EMD) Manager serving as the EOC Liaison.

- The EOC Operations Section coordinates the following operational groups: Health Care, Law Enforcement, Fire and Rescue, Care and Shelter, and Construction and Engineering.

- The EOC Planning Section is made up of situation analysis coordination, short- and long-range planning, status board displays, documentation, and EOC registration.

- The EOC Logistics Section is primarily the responsibility of the General Services Agency, which coordinates countywide communication, resources and support, and transportation.

- The EOC Finance Section is the responsibility of the County Administrative Office in coordination with the Auditor-Controller for documentation of all expenditures made in support of the disaster as well as managing the financial aspect of the recovery operations.

The EOC was initially activated at a Level I during the Laguna and Ortega fires. It was staffed by the Orange County Fire Department/Emergency Management Division (OCFD/EMD) personnel who coordinated with GSA/Communications to notify the County Emergency Organization and activate the Emergency Broadcast System (EBS). At 5:31 p.m., the county Emergency Management Council chairman, all county agencies and departments, responding jurisdictions, and the Incident Command Post were informed of an escalation to a Level II EOC activation.

Level II activation included staffing by OCFD/EMD and representatives from the Board of Supervisors' office, County Administrative Office, Fire Department, Sheriff's Department, Environmental Management Agency, Health Care Agency, Social Services Agency, General Services Agency, John Wayne Airport, Probation, and the Integrated Waste Management Department. The State Office of Emergency Services provided a representative to the EOC to support local government operations and to coordinate state mutual aid. In addition to county personnel, liaisons from the cities of Huntington Beach, Anaheim, Fountain Valley, and Seal Beach, and volunteers from the American Red Cross/Orange County Chapter and Radio Amateur Civil Emergency Services (RACES) from Orange County and Seal Beach assisted in the EOC.

### **EOC Activation Levels**

**Level I**-The EOC is activated to gather information and establish liaison with the impacted jurisdiction or agency. It is staffed by the Emergency Management Division personnel.

**Level II**-The EOC is activated to gather and disseminate information to the public and media, provide necessary coordination, and respond to resource requests. The EOC is staffed by the EMD and representatives from the affected agencies.

**Level III**-The emergency condition requires heavy commitment of county resources for response. EOC staffing includes the same type of personnel required for Level I and II, as well as a Policy Group made up of emergency management representatives.

**Level IV**-The potential for widespread disaster exists which threatens to impact or require commitment of all county resources. The EOC will be fully staffed to support the incident command system.

During this time, between 40 and 75 personnel staffed the EOC around the clock. Most of the staff worked 12-hour shifts, though rumor control staff worked shorter, 6-hour shifts due to the stress of the high number of telephone inquiries fielded during that period.

Command of operations and public protective action decision-making took place at the field Incident Command Post. The EOC remained at a Level II activation throughout the duration of this emergency period. Twenty-four hour staffing provided continuous coverage for the EOC functions of Public Information; Rumor Control; and EOC Operations, Logistics, and Planning Sections.

The EOC maintained communications with the County Fire Command Post, County Fire Logistics, Fire Public Information Officers, City of Laguna Beach EOC, City of Irvine EOC, City of Newport Beach EOC, the American Red Cross/Orange County Chapter EOC, State OES Southern Region offices, and with all participating county agencies.

### **EOC Public Information**

Public inquiry and rumor control telephone lines were activated at the EOC to provide information to county residents concerned about the fires. The EOC served as an information gathering point. Verified information and documented misinformation were compiled into status reports and distributed to county agencies, jurisdictions, and EOC staff. The PIO function in the EOC was filled by various county agency representatives and volunteers. Approximately 150 media inquiries and interviews were conducted from the EOC. Contacts at the EOC included: CBS, OCN, KNBC, KFVB, KWVE, the *Korean Times*, the *Los Angeles Times*, and the *Orange County Register*. Additionally, two press releases and two emergency broadcast messages were released from the EOC to inform the public of evacuation procedures and road closures. A third press release urged residents and business owners who had been impacted by fire damage to call the EOC and report pertinent information.

### **Rumor Control**

The rumor control function was established in the EOC as part of the Level II activation on October 27. As soon as the rumor control telephones were activated, staff were inundated with calls regarding the locations of the fires, evacuation of residents, location of road closures and shelters, methods of volunteering, donation locations, and numbers to call to get further information. Originally 12 telephones were available for calls from the public. However, due to the enormity of the disaster, it was necessary to increase the number of telephone lines to 30 to handle the demand. From October 27 to October 31, 43,000 telephone calls were recorded. Documentation of telephone calls was difficult due to the sheer number and frequency.

### **Local Emergency Proclamation**

At 4:00 p.m., October 27, 1993, a Local Emergency was proclaimed by the chairman of the County Board of Supervisors due to the extreme peril to the safety of people and property within Orange County. These conditions were likely to be beyond the control of the services, personnel, equipment, and facilities of the county and required the combined forces of other political subdivisions in order to combat the threat. The proclamation also included a request for the governor of California to declare a State of Emergency in the affected areas.

The Proclamation of Local Emergency for Orange County was extended in 2 week intervals due to the resulting environmental conditions that continued to threaten life and property.

### **State of Emergency**

On October 28, the governor declared a State of Emergency on behalf of the counties of Orange, Los Angeles, Riverside, San Diego, and Ventura. The State of Emergency Declaration authorized the governor to do the following: (1) provide mutual aid to be rendered in accordance with approved emergency plans

whenever there was need for outside aid in any county and/or city; (2) exercise with the area designated all police power vested in the state by the Constitution and the laws of the State of California; (3) suspend the provisions of any regulatory statute, or statute prescribing the procedure for conducting state business, or orders, rules, or regulations of any state agency; (4) to commandeer or utilize any private property or personnel (other than the media) in carrying out his responsibilities; and, (5) to promulgate, issue and enforce orders and regulations as he deems necessary. The State of Emergency also authorizes local jurisdictions to command the aid of citizens as deemed necessary to cope with an emergency.

### **Presidential Declaration**

In response to a request from the governor of California, the President of the United States, on October 28, 1993, signed a Declaration of Major Disaster for the State of California. Following the Presidential declaration, the director of the Federal Emergency Management Agency (FEMA) designated the five counties eligible for federal disaster aid to affected residents and local governments. This triggered the release of federal disaster funds to help citizens and local governments respond and recover from the effects of the wildfires impacting Southern California.

The declared assistance is coordinated by FEMA and includes temporary housing for

those whose homes were affected, grants for meeting disaster-related needs, low-interest rate loans to cover uninsured private and business property losses, and other relief programs for individuals and families stricken by the disaster. Federal funding is also available to eligible local governments for up to 75 percent of the approved costs for restoring crippled public facilities.

### *Disaster Application Center*

As a result of the presidential declaration, the State Office of Emergency Services and the Federal Emergency Management Agency opened a Disaster Application Center in Laguna to assist residents in affected areas through the disaster relief application process.

### **Health Care Operations**

Within minutes of the 11:50 a.m. start of the Laguna fire on October 27, 1993, the Health Care Agency's (HCA) Mental Health Services were staffing evacuation shelters at the request of the Laguna Beach Unified School District and the American Red Cross.

In response to the Laguna Beach disaster, the HCA Mental Health Services provided disaster and crisis services to adults and children. These services included information and referrals, triage, evaluation, crisis counseling, medications, critical incident stress debriefing, parent and teacher training, outreach and follow-up services, and housing assistance. Staff

### **Legal Authority Given By the Board Chairman's Proclamation of a Local Emergency**

The proclamation of a local emergency provides legal authority for the following: (1) to request that the governor proclaim a state of emergency, (2) to promulgate orders and regulations necessary to provide for the protection of life and property including orders or regulations imposing a curfew within designated boundaries, (3) to exercise full power to provide mutual aid to any affected area in accordance with local ordinances, resolutions, emergency plans, or agreements, (4) to request that state agencies provide mutual aid, (5) to require the emergency services of any local official or employee, (6) to requisition necessary personnel and material of any department or agency, (7) to obtain vital supplies and equipment and, if required immediately, to commandeer the same for public use, (8) to impose penalties for violation of lawful orders, (9) and to conduct emergency operations without facing liabilities for certain privileges and immunities.

provided these services at emergency shelters and evacuation centers, schools, the Disaster Assistance Center (DAC), and the American Red Cross Disaster Center. Twenty-four HCA staff members were also present at the county Emergency Operations Center (EOC) to provide assistance in the form of rumor control. A dedicated telephone line was established at the Laguna Beach Adult Outpatient Clinic to provide disaster-related information and referral services to the general public.

From the onset of the incident through November 2, approximately 90 staff members provided a total of 1,315 hours of direct services around the clock to approximately 450 individuals and over 20 emergency workers.

Information gathered through interviews and data collection forms at the Disaster Assistance Center showed that many adults complained of depression, nervousness, inability to sleep and to concentrate on occupational or personal activities, and frequent panic at-

tacks. These behaviors could lead to family discord which could escalate as people rebuild their homes and lives.

The Orange County Mental Health Services provided a range of services to children, adults, and families for a sixty day period, through December 27, 1993.

The HCA provided health and safety information to rumor control staff to aid them in answering questions. The information contained precautions to residents and business owners such as issues of food exposure to heat, smoke fumes, and chemicals used in firefighting. They assured the public that the domestic water supply system serving the city of Laguna Beach was safe and also addressed hazardous chemicals and general cleanup of ash. A public health air quality advisory was also issued.

#### *Health Care Communications*

The Hospital Emergency Administrative Radio (HEAR) system, managed by the Health



*Evacuation Center. (Photo courtesy of the Orange County Register.)*

Care Agency/Emergency Medical Services, was activated by GSA/Control One at the request of the Incident Commander to handle the firestorm's potential for severe mass casualties. The system activation notified all hospitals within the county that there was an emergency incident and that these facilities might receive patients. HCA monitored the HEAR system to keep the EOC apprised of incident-related injuries. The Emergency Medical Services' policies and procedures and the HEAR system worked well during the EOC activation.

### **Care and Shelter Operations/ American Red Cross**

The American Red Cross (ARC), in coordination with the county Social Services Agency (SSA), county Health Care Agency's Mental Health Services, and Department of Education, established 5 shelters to house victims of the Orange County fires.

Eight SSA staff were initially dispatched to shelters at Woodbridge High School in Irvine, Dana Hills High School in Dana Point, Corona Del Mar High School in Newport Beach, Saddleback College in Mission Viejo, and the community services facility in San Juan Capistrano. Subsequently, ten SSA staff were sent to relieve staff at other shelters that remained open. A total of 18 SSA staff were used by the ARC.

The ARC had 23 paid staff and 942 volunteers coordinating the response to fire victims. Twelve hundred citizens registered with the ARC, 460 beds were used, 5,430 meals were served, and 590 out-of-state calls were received during the first six days. Many families stayed with relatives and friends or in nearby hotels.

Due to the magnitude of the disaster, an ARC damage assessment team from the southern area zone and an assistant job director from the north coastal zone of California were brought in to assist the ARC staff.

### **GSA Communications Operations**

The Communications Division of the General

Services Agency (GSA) was responsible for the 24-hour county communications center (Control One). Their responsibility was to provide, maintain, and coordinate countywide public safety radio systems; provide and maintain EOC communications facilities; manage EOC communications systems; and operate communications consoles and teletype equipment. They also received, recorded, and distributed radio messages to the EOC and transmitted messages by radio, teletype, or telephone at the direction of EOC personnel.

Control One made notifications to city, county, state, and private agencies throughout the entire incident. Emergency Broadcast System and sigalert messages were released to the media and other public safety agencies. Two mobile communications units plus 24-hour staffing of the vehicles were provided for Orange County Fire and Sheriff's Departments.

At 4:00 p.m. on Wednesday, October 27, the Laguna fire reached the Moorehead remote repeater site in Laguna Beach. The site suffered major damage, taking the Laguna Police Department's green channel, the local government channel, and the paramedic remote out of service with it. As soon as it was safe, repair units were sent to assess the damage and begin repairs. On arrival at Moorehead, they inspected the site and reported that the antenna feed lines were destroyed, that Edison power had been knocked out, and that the backup generator did not operate. After communications staff put out small spot fires, temporary repairs were made. By 8:30 p.m., Edison crews had restored power to Laguna Beach. As soon as power was restored, the Moorehead remote repeater site was reactivated, and the Laguna Beach Police Department was back in service.

The temporary loss of the Moorehead remote site had no effect on fire department communications.

### **RACES**

The Orange County Radio Amateur Civil Emergency Services (RACES) is a volunteer communications resource under the direction

of GSA/Communications that assists in providing for the county's communication requirements. RACES uses radio amateur frequencies under the authority of the Federal Communications Commission in support of governmental emergency communications. They assisted communications at the EOC and established communication links in the field for reports to the EOC.

Prior to the activation of the EOC, GSA Communications had placed RACES on standby for possible activation of the EOC. At 2:42 p.m. the EOC was activated; at 4:00 p.m., the RACES radio nets were activated. RACES personnel were on continuous alert for the duration of the EOC activation and many served one or more shifts in the EOC or in the field.

RACES personnel served in the county EOC as radio communicators, rumor control personnel, message runners, and status board plotters. Some were also dispatched into the field to serve as fire spotters and to OCFD headquarters for communications assistance. Other operators communicated with the American Red Cross and the Hospital Disaster Support Communications System.

### **Environmental Management Agency**

The Environmental Management Agency (EMA) provided direct support to the OCFD and the Emergency Management Division (EMD) with personnel and equipment. This was a multifunction effort with primary involvement of EMA's Public Works Operations, Harbors Beaches and Parks (HBP), and EMA's Regulations and Public Works Survey.

Shortly after the Laguna fire started, EMA/Operations mobilized bulldozers and water trucks to the fire scene and worked with fire department personnel and equipment to cut fire breaks. This effort continued through the night and next day until the fire was contained.

As soon as a piece of equipment was released from the Laguna fire, it was relocated to Caspers Park to aid in fighting the Ortega

fire. Heavy equipment crews were also dispatched from the Laguna and Ortega fires to assist with firefighting in Malibu. Assignments on the Malibu fire included cutting fire breaks to protect Pepperdine University and homes in Topanga Canyon. Eight pieces of heavy equipment and over 15 public works operations personnel were directly involved in fighting these three fires.

Concurrent with dispatching equipment to fight the Laguna fire on the afternoon of October 27, EMA opened its Public Works Operations Storm Center, EMA staff reported to the county Emergency Operations Center (EOC) to assist with the operation, and HBP staff were assigned as fire spotters to aid in tracking the Stagecoach, Laguna, and Ortega fires. Throughout the night of October 27, Public Works Operations and HBP staff investigated reports of fires throughout Southern Orange County, particularly in the areas of Coto de Caza, Dove Canyon, and Trabuco Canyon, providing firsthand information to the EOC essential for accurate reporting and rumor control. EMA executive and administrative management staff assisted with EOC operations throughout the fire period, and EMA provided a large number of staff to answer rumor control telephone lines.

On Thursday, October 28, EMA building inspectors inspected the fire damaged areas of Emerald Bay and El Morro Mobile Home Park, assessing the structural damage and threat to life and property and directing Public Works Operations crews in demolition activities necessary prior to letting property owners search their home sites for personal belongings.

EMA Public Works Survey personnel scheduled aerial photographs of the Laguna and Ortega burn areas and developed detailed maps of the burn area for use by county and city fire departments and other agencies in fire recovery operations.

Since the fire, EMA Public Works Operations has conducted 7-day per week fire recovery operations in the county and the City of Laguna Beach. The effort in the city is being

performed under reimbursable mutual aid agreements. The effort has included restoration of areas damaged by the fire or threatened by mud, landslides, or floods, including direct supervision of 20 crews (over 300 personnel) of California Conservation Corps (CCC) workers and coordination of the fire recovery assistance efforts of consultants and numerous federal and state agencies.

Public Works Operations' crews remain on 24-hour alert and will be mobilized in advance of threatening storms to ensure quick response to mud or flood threats in the fire-ravaged areas.

EMA Public Works Operations was designated by the Board of Supervisors to coordinate all claims for reimbursement to FEMA and the State Office of Emergency Services for logistics support, disaster assistance, and recovery costs incurred by all county agencies for efforts on the October-November fires. The Orange County Fire Department is the exception; they coordinated their own efforts to ensure all identified county costs are included.

### **Assessor Operations**

The Orange County Assessor issued a media release announcing that victims of the recent fires were entitled to property tax relief. Property owners were urged to file a calamity reassessment claim form. Orange County, the State of California, and the Federal Emergency Management Agency established public assistance centers to support this effort.

### **Law Enforcement Operations**

In response to the Stagecoach fire, the Sheriff's Department initially dispatched 11 deputies and 4 sergeants to the scene in the area of Silver Spur and Covered Wagon. By 4:30 a.m. on October 27, an additional 10 reserve deputies and a Mobile Command Post were established at the scene of the fire. One captain and 1 lieutenant worked with OCFD staff to monitor and assist with road closures and voluntary evacuation measures.

The Sheriff's Department provided helicopters to assist in the firefighting effort by making aerial water drops.

By 11:40 a.m. on October 27, the Stagecoach fire was isolated to a canyon west of the Villa Park Dam. Sheriff's deputies directed and restricted traffic at key intersections. As deputies were preparing to demobilize, the Laguna fire erupted. Deputies no longer needed at the Stagecoach fire were diverted directly to assist with the fire in Laguna Beach. In all, 28 Sheriff's personnel and 22 vehicles responded to and assisted at the Stagecoach fire, resulting in 420 hours worked.

At 12:43 p.m., the Sheriff's Department was requested to evacuate both the El Morro Elementary School and the 223-space El Morro Mobile Home Park near the City of Laguna Beach. Six on-duty field deputies and 2 sergeants were dispatched to begin evacuation measures. One sergeant and 4 reserve deputies, as well as the Sheriff's Mobile Command Post, were diverted from the Stagecoach fire to the Laguna fire. Two lieutenants were also dispatched to coordinate on-site evacuation efforts.

At 1:17 p.m., 34 minutes after the request to evacuate was received, on-scene Sheriff's supervisors reported the El Morro School had been totally evacuated. At 1:42 p.m., 59 minutes after the request, residents of the El Morro Trailer Park had been evacuated to the high school as well. One of the Sheriff's Department helicopters arrived at the scene of the Laguna fire at 1:45 p.m. and began making aerial water drops.

While the El Morro evacuations were underway, at 2:47 p.m., information was received from the fire Incident Command Post that they were losing structures in Emerald Bay. Two sergeants and 8 deputies responded to assist with evacuation efforts in Emerald Bay.

At 3:00 p.m., the Sheriff's Department Emergency Operations Center (EOC) was activated and extensive mobilization plans were placed in motion. By 6:00 p.m., Wednesday, October 27, 175 Sheriff's Department person-

nel had been deployed in the City of Laguna Beach for evacuation and security purposes. A direct teletype message was sent to all Orange County law enforcement agencies informing them that the Sheriff's Department, as the County Law Enforcement Mutual Aid Coordinator, had activated its EOC and to anticipate a request for mutual assistance on short notice.

At 6:15 p.m., the Laguna Beach Police Department made a formal request for mutual aid assistance to the sheriff. One hundred sixty eight (168) officers from 20 Orange County law enforcement agencies responded to the mutual aid request to augment sheriff's deputies already deployed. As a result, not counting officers from the Laguna Beach Police Department, more than 300 police officers and sheriff's deputies deployed to assist the City of Laguna Beach.

On report of the Ortega fire, Sheriff's Department personnel were deployed to the Ortega Highway fire Command Post, Dove Canyon, and Coto De Caza areas for possible evacuation measures. A second Sheriff's Command Post was established in the Dove Canyon area.

By Thursday, October 28 at 6:00 p.m., evacuation and security measures were well under control and all Orange County law enforcement agencies, with the exception of Sheriff's deputies were released from their mutual aid commitment. Sheriff's deputies, continued to provide assistance in affected areas of Laguna Beach, Trabuco Canyon, and the Ortega Highway.

As of 5:30 a.m., Tuesday, November 2, deputies deployed for fire-related assignments had been reduced to 2 sergeants and 12 deputies assigned to a fire watch in the Dove Canyon and Coto De Caza area. Further, 4 deputies remained around the clock in Emerald Bay and El Morro Trailer Park for approximately two additional weeks.

The Sheriff's Department EOC coordinated field personnel until 12:00 p.m., Wednesday, November 3. Deputies assigned to the fire watch in Dove Canyon and Coto De

Caza were released at this time as well.

During these multiple disastrous fires, 800 deputies and civilian Sheriff's personnel were dedicated to the task at hand. More than 11,000 hours were expended by these employees.

### **Recovery Operations**

Long-term recovery from any disaster may go on for years until the entire disaster area is completely redeveloped, either as it was, or for a new purpose that is less disaster prone.

The recovery and clean up of the unincorporated areas damaged by the Laguna fire requires extensive efforts among federal, state, and county agencies. Current activities to promote a speedy recovery include an on-site permit assistance program for impacted homeowners and removal of structural hazards. Additional measures include debris removal and streamlined permit procedures for replacement construction. Erosion control measures are being examined due to the fire damage in the flood plain areas.

A resolution was adopted by the Board of Supervisors on November 9, requesting that all federal, state, and local agencies cooperate on and implement all necessary erosion control measures as soon as practical, including re-seeding of burned areas as determined to be necessary by the California Department of Forestry.

### **Community Disaster Recovery And Preparedness Center**

To enhance local firestorm recovery efforts and reduce the risk of future disaster damage, the Governor's Office of Emergency Services (OES) and the Federal Emergency Management Agency (FEMA) opened a special community service center in Laguna Beach.

The goals of the center are to assist local recovery and to help the impacted communities prepare for hazards caused by the fires. The center's staff represents federal, state, and local agencies and provides residents with disaster relief options.



Recovery activities include accepting registrations and applications for disaster assistance programs; responding to inquiries on the status of applications; conducting workshops on Small Business Administration disaster loan applications; holding seminars and meetings on private property restoration and rebuilding; processing local permits; assisting with debris removal; and other issues of special concern.

Preparedness services include assisting

neighborhood organizations in planning for future emergencies; providing maps of high-risk flood, erosion, and mudslide areas; recommending actions to reduce mudslides; conducting seminars on erosion control and landscaping; and setting up a library of videotapes, plans, checklists, mitigation, safety, and preparedness materials for community use.

The needs of the community will determine the duration of the center's activation.

# Key Issues

## Pre-incident Preparation

The Orange County Fire Department responded effectively to the Laguna, Stagecoach, and Ortega fires due in part to pre-incident preparation.

### *Determining Fire Danger, and Wildland Firefighting Dispatch Levels*

Orange County Fire Department's Emergency Communication Center (ECC) collects daily wildland fire danger statistics for analysis by the Chief of Operations. Based on that analysis, apparatus staffing and wildland firefighting dispatch levels are set.

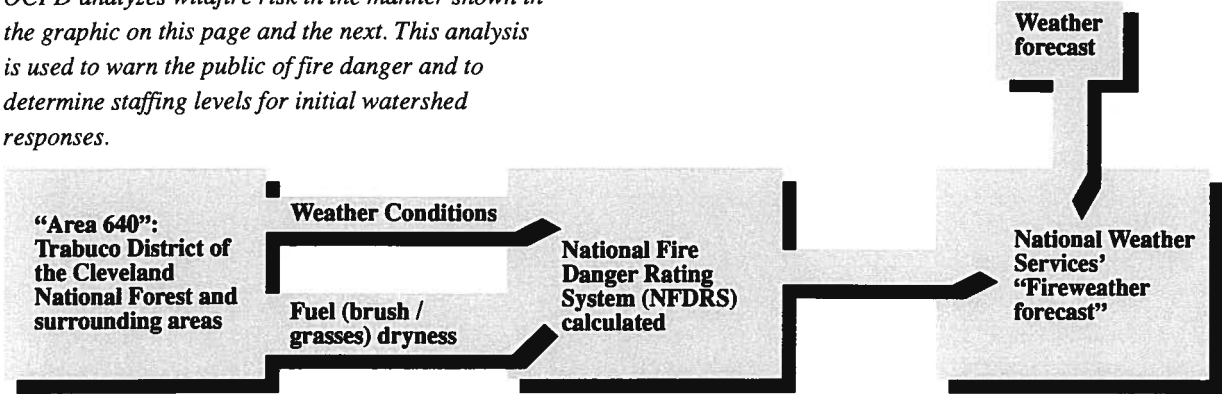
The OCFD uses the National Weather Service's "fireweather forecast" to determine the county's fire risk for each day during the declared fire season. This forecast is based on the National Fire Danger Rating System (NFDRS) along with current local weather reports. NFDRS designates individual areas across the United States that have similar fire risk factors, such as fuels, topography, and weather. Within each of these areas, daily fire risk factors are calculated. The Orange County Fire Department uses the fire risk factors from

the NFDRS's *Area 640* (which includes the Trabuco District of the Cleveland National Forest and the immediately surrounding areas) to determine the county's fire danger and set its wildland firefighting dispatch levels. The fire danger is expressed as Low, Moderate, High, Very High, or Extreme. By using this system, the department is able to adjust their staffing levels and response standards and deploy fewer resources on low fire risk days, while providing more resources on higher fire risk days.

The Red Flag Alert Program is another system used by the department to inform the public, and determine wildland firefighting dispatch levels. This program is a cooperative local, state, and federal watch-and-warning fire prevention and public warning system. The Red Flag Alert Program uses four stages.

During Stage I and Stage II alert conditions, ECC notifies the OCFD's red flag coordinator, all fire stations, and on-duty chief officers of the alert. The department's public information officer contacts local news media, informing them that the Orange County Fire Department has declared a Red Flag Fire Danger alert for the County. The department's

*Determining fire danger and staffing levels- The OCFD analyzes wildfire risk in the manner shown in the graphic on this page and the next. This analysis is used to warn the public of fire danger and to determine staffing levels for initial watershed responses.*



Community Safety and Education Bureau may activate pre-identified red flag alert patrols in designated wildland areas.

During Stage III alert conditions, all stations and on-duty chief officers are notified, news media is contacted, and red flag patrols are sent into the wildland areas. All red flag cooperating agencies are notified by the Operations Coordination Center (OCC) in Riverside, and weather conditions are continuously monitored.

During Stage IV alert conditions, all stations, on-duty chief officers, news media, and cooperating agencies are notified that red flag conditions no longer exist and to stand-down from alert status.

*OCFD's Flexible Response*

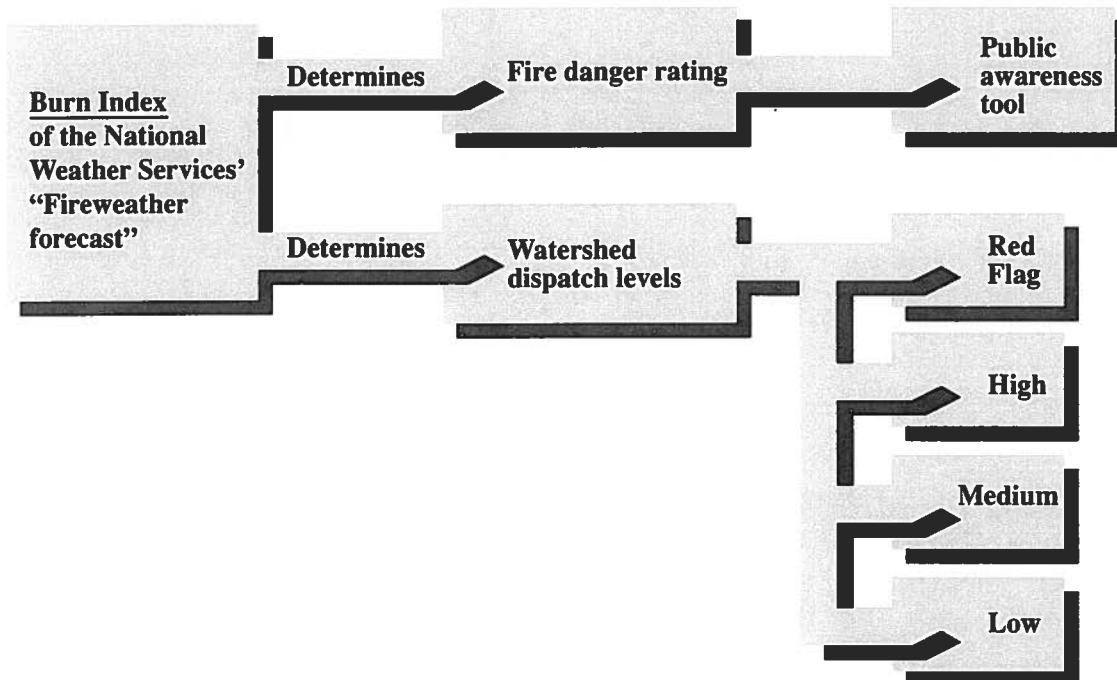
The Orange County Fire Department is flexible. We operate during normal conditions in a cost effective manner, yet respond at full strength when necessary. This flexibility, built into the department's organizational structure, allowed the department to respond effectively during the recent fires.

The OCFD's Paid Call Firefighter (PCF)

Program provides the department with a flexible operational advantage: the OCFD can quickly double the available staffing at a comparatively low cost. The OCFD employs 683 paid call firefighters who provide staffing to the department's 10 all-PCF and 13 combination career/PCF stations. Combined, PCF staff a total of 28 engines, 1 truck, 6 water tenders, 4 air utility units, 5 patrols, and 2 hand crews.

In addition to PCF support, the department can call on the two shifts of off-duty career firefighters to increase its overall response capabilities in case of extreme emergency. The department maintains a relief fleet of 17 engines, 5 trucks, 7 paramedic units, and 3 battalion command units that can be staffed by PCF and career firefighters called back to duty.

With the outbreak of the Stagecoach fire, OCFD staffing desk personnel were recalled to duty at 1:30 a.m., Wednesday, October 27. Their immediate task was to identify on-duty personnel assigned to the Stagecoach incident who were scheduled to work that morning starting at 8:00 a.m. These personnel were identified and off-duty firefighters were con-



tacted to report at 8:00 a.m. to cover these open positions. This sequence of identifying open positions and assigning off-duty personnel to fill them continued throughout the duration of all three incidents.

*Preparations on October 26—first day of the fires*

Due to increasingly dangerous fire weather conditions, OCFD executive management limited the amount of firefighting equipment to be sent out of county on a mutual aid request to 4 OCFD strike teams, 2 Orange County city fire department strike teams, and 2 OCFD dozers. It was determined that any additional resource requests would be handled on a case-by-case basis with approval from the Assistant Chief of

Operations. Critical fire weather in the county was expected to continue to intensify and peak the following morning. Increased coordination with the National Weather Service, US Forest Service (USFS), and the California Department of Forestry (CDF) continued throughout the day. OCFD executive management developed a staffing plan to be implemented on Wednesday morning. This plan included increased career staffing, staffing of all PCF stations, and staffing of relief apparatus. Due to the high winds on October 26th, a decision was made to immediately add a fourth engine to the response to all reported structure fires. This measure was taken to provide enough firefighting resources to minimize the potential for a fire that started in one home spreading to neighboring homes by gusting winds. On Wednesday morning, October 27, a Red Flag Alert was issued by the department due to the extreme fire danger and the potential of major fires.

<b>Dispatch Level</b>	<b>Resources Dispatched</b>
Low	1 battalion chief 3 engines
Medium	1 battalion chief 5 engines 1 water tender 2 dozers 2 hand crews 1 paramedic unit 1 patrol
High	1 division chief 2 battalion chiefs 5 engines 1 water tender 2 dozers 2 hand crews 1 paramedic unit 1 patrol 1 safety officer
Red Flag	1 division chief 2 battalion chiefs 5 engines 2 water tenders 2 dozers 2 hand crews 1 paramedic unit 1 truck company 1 patrol 1 safety officer 1 type 3 engine strike team (Aircraft assigned during stage III alert conditions-3 air tankers, 1 air attack)

**Impact of Multiple Incidents**

With two major fires burning out of control in Ventura and San Diego Counties, Orange County was hit by a series of arson-related blazes. This series of major blazes placed an unprecedented strain on the Orange County Fire Department and other local and regional fire departments. In just over 16 hours, 3 major blazes were ignited within Orange County (Stagecoach, Laguna, and Ortega).

The Stagecoach incident began at 11:07 p.m. Tuesday evening, October 26, and by 4:29 p.m. Wednesday afternoon, October 27, during the height of the Laguna incident, the Ortega fire was set. Only 1 battalion chief, 2 engines, and 1 paramedic unit could be sent to the Ortega fire due to severe resource depletion. Responsibility for this fire was quickly assumed by the U.S. Forest Service.

During this same 16 hour period, 10 additional fires were ignited and burning out of control in Southern California. The sheer number and magnitude of these fires made critical fire suppression resources extremely scarce.

Competing for critical fire resources is not new to Southern California firefighters. Typically wildland fires strike on multiple fronts, perhaps hundreds at once, all across the Western United States.

### **California Mutual Aid System**

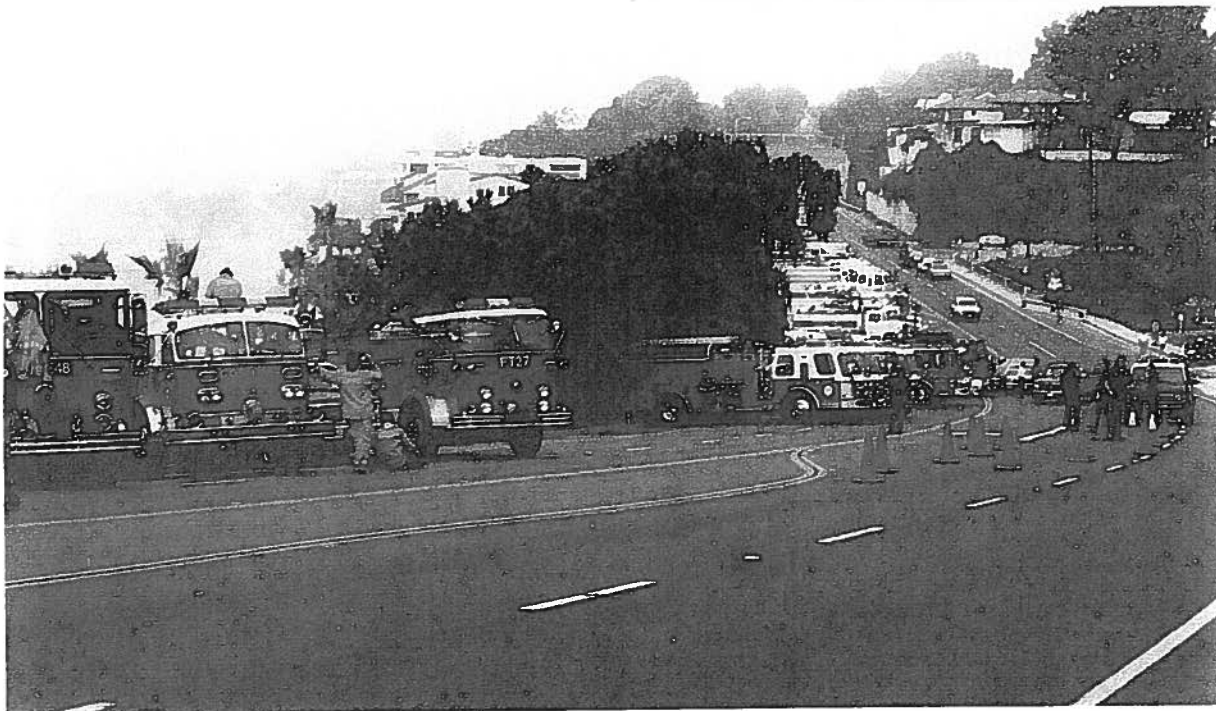
The established mutual aid system for local and state firefighting agencies in California provided an exceptional amount of assistance to Orange County during the recent fires. Many of these resources were committed to several fires over a ten-day period before returning to their homes.

The California Mutual Aid System was described by the United States Fire Administration as "unparalleled in the United States." The California Mutual Aid System allows resources committed to an incident to escalate from one or two engines to hundreds of engines. Specific requests are processed from the local agency to the county coordinator, then to the regional coordinator, then to the state coordinator, if necessary, each ascending level

having access to greater numbers of firefighting resources. The coordinators notify individual fire departments to have their units form convoys at designated meeting places. A strike team leader is assigned to each 5-engine strike team. These leaders direct the strike team's actions, based on orders channeled through the Incident Command System. With the large urban fire departments in Southern California and the abundance of joint powers communications centers for smaller departments, requests for mobilization of strike teams are processed rapidly.

During most wildland fires, mutual aid resources are assembled in preparation for anticipated strategic actions. With wildland fires that rapidly turn into urban interface conflagrations, unfortunately, there is little time to plan strategic actions. Resources are needed immediately and delays can be disastrous.

The California Mutual Aid System is considered state of the art, but should be continually reexamined and streamlined for urgent situations like wildland-urban interface fires.



*Aliso Staging: Fire apparatus staged on Pacific Coast Highway at Aliso Pier, available on a 3 minute callback. Aliso Pier was one of three staging areas during the Laguna Fire.*

### Incident Management

The Orange County Fire Department routinely uses the Incident Command System (ICS) to manage incidents regardless of their size or complexity. The department's routine use of ICS assures that each individual understands the system and can efficiently function within it. The department's response to the recent series of fires was no exception. Whether it was a single engine arriving on-scene to assume command, an individual appointed to an ICS position, or a strike team leader reporting for assignment, all personnel knew their place within the Incident Command System.

Combatting the significant fires that struck Orange County required a major mobilization of the department's suppression, command, and logistical forces. As the Stagecoach fire wound down, Orange County Fire Department's major incident management team

was requested to redeploy to join the newly established unified command for the Laguna fire. Under unified command, the jurisdictions and agencies affected directly or indirectly by the incident share command responsibilities. Unified command coordinates decision-making between agencies and jurisdictions, develops mutually agreeable priorities, and maximizes the control efforts of all those impacted. Typically a single agency is selected as the processor of resource requests; this establishes a tracking mechanism to prevent redundancy and to later compute the incident costs. At the Laguna incident, a unified command was established between the Orange County Fire Department and the Laguna Beach Fire Department 20 minutes into the incident. In addition, a direct liaison was established with 2 local and 1 state law enforcement agencies.

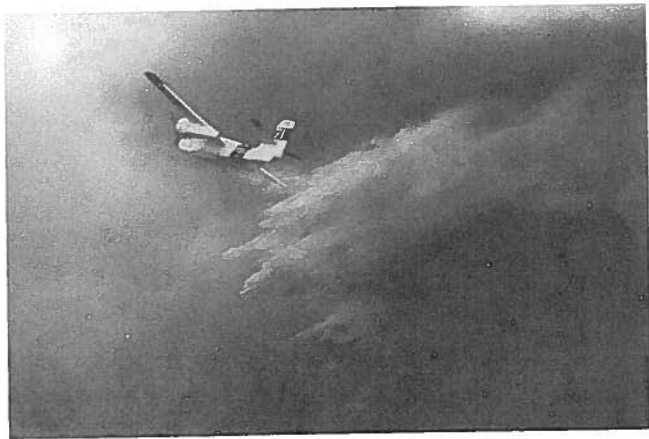


*A Type 1 strike team assigned to structural protection prepares to defend homes as the Laguna fire approaches. If final fire control lines could not be held, the next stop would be several miles south and many homes later.*

*Resource-driven decision making*

The fires forced resource-driven decision-making, particularly during the Laguna fire. When demand exceeded supply, incident commanders were faced with some difficult choices. Laguna's Unified Command discussed strategic priorities and the need for primary and secondary control points should the fire cross Laguna Canyon Road. Although 40 engine strike teams (200 engines) had been requested in anticipation of the fire jumping Laguna Canyon Road, on-scene resources were inadequate to accomplish all incident priorities. As such, contingency plans called for the immediate redeployment of most strike teams from fire-fighting assignments to new locations south of Laguna Canyon Road if the Canyon Road control point was not held. The Unified Command, faced with greater demand than supply, evaluated the risk to life and property and agreed to the strategy.

North of Laguna Canyon Road, fire came into town on a wide front. Unlike most incidents where Command establishes specific control points, the pace at which the Laguna fire was spreading called for a different tactic: Decision-making authority was given to the strike teams. Engine companies were directed to pick defensible homes, usually those with defensible space and noncombustible roofs.



*Air tanker drops retardant on left flank of Laguna fire. These drops must be supported by hand crews, dozers, or engines; otherwise the fire will quickly burn through the areas sprayed by retardant and continue its advance.*

The strategy of staying in front was purely defensive and intended to save lives and property, not extinguish the fire.

The intensity and swiftness of the fire storm caused the number two control point—the next backup position—to be lost. As firefighters continued to stand and fight along narrow winding streets, the Unified Command turned to the third control point and beyond. If control point three could not be held, the next stop would be several miles south and many homes later. The Operations Chief continued to assign newly arriving companies and redeploy existing strike teams to support control point three objectives. The left flank of the fire was finally held at the third control point.

Forward observers and division supervisors experienced difficulty in relaying fire progression information to the incident command post due to congested radio frequencies and jammed telephone lines. This made it difficult for the unified command to visualize the scope of the Laguna fire and make appropriate tactical decisions.

Attention turned to the right flank of the fire which was about to threaten the cities of Irvine and Newport Beach. Three divisions, under the direction of an ICS Branch Director, were established to control this portion of the fire. By 6:00 p.m. on October 28, a perimeter was clearly established and the fire was contained.

### **Air Support**

Air tankers and helicopters were used to combat the fires that struck Orange County. Aircraft are most effective during the first fifteen minutes of a fire; water drops can knock out a smaller fire before it can turn into a conflagration. Unfortunately, limited helicopter and no air tanker support was available in the early stages of the Stagecoach, Laguna, and Ortega incidents—a pivotal time in a wildland fire fight. The Sheriff's Department helicopters were available and flew water-dropping missions on the Stagecoach and Laguna fires. Sheriff's Department helicopters also were used

for observation during the Ortega fire.

#### *Limitations of Air Tankers and Helicopters*

Air tankers are used to drop retardant to slow the spread of fire. In order to be completely effective, these drops must be supported by hand crews, dozers, or engines, otherwise the fire will quickly burn through retardant-sprayed areas and continue its advance. During the Laguna fire, fire crews were not available to support the retardant drops since they were committed to structure protection. Helicopters, too, work well in supporting fire crews on fire lines and in and around structures.

Air tankers and helicopters have other limitations. Air tankers cannot fly safely at night and their drops become less effective when winds exceed 30 mph. Smoke can make it impossible for them to work on the downwind side of the fire, which in most cases is the most intensely burning area. On the Laguna incident, air tankers were ineffective at Skyline Drive, Mystic Drive, and Emerald Bay, for this reason. However, air tankers have been credited with saving many homes on Upper Park Drive and Alta Laguna.

The Orange County Fire Department does not have an air operations section. Any need for aircraft within the department must be processed through contractual agreements with other agencies by the Emergency Communications Center. Often the most immediately available aircraft is the sheriff's light observation helicopter—capable of carrying a 108-gallon water bucket. Sheriff's Department helicopters were used on the Stagecoach and Laguna fires. During the Laguna incident, Sheriff's helicopter pilots dropped over 15,000 gallons of water on the fire.

Light observation helicopters have limited uses in firefighting. They carry limited water, do not have forward looking infrared (FLIR), cannot transport firefighting crews or equipment, may not have the power for critical maneuvering in tight canyons and hillsides, and have limited rescue capabilities. OCFD's primary sources for full-fledged firefighting

aircraft is the California Department of Forestry and other city and county fire departments outside of Orange County.

#### *Initial Attack Aircraft*

OCFD's Laguna incident command staff believed immediate air support could have made the Laguna fire manageable during the first quarter hour of its spread. Helicopters could have made water drops on the head of the fire, while heli-attack crews joined by first arriving engines worked the flanks towards the head to contain the blaze. Instead, first arriving engines were unable to catch the head of the fire and quickly ran out of water and hose trying to outflank it.

OCFD's duty officer in ECC called the Operations Coordinations Center (OCC) in Riverside twice in the first half hour of the Laguna incident, attempting to step-up the department's priority on aircraft. Air tankers did not arrive, however, on the Laguna incident until 1:40 p.m.

Air tankers and helicopters are currently a regional resource owned and managed by other jurisdictions. The sheer number of incidents during the time of the Laguna fire reduced OCFD's access to these air tankers and helicopters.

### **Water Availability**

Water problems are commonly encountered by California firefighters on any fire of major proportions such as these recent wildfires. During the Laguna fire, water streams sprayed on burning homes sometimes fell to a trickle. Discussions centered on five issues: an unbuilt water reservoir, pump power failures, low water pressure, alternative water sources, and firefighting water-use strategies.

The Laguna Beach water system is actually a series of multilevel systems with the bulk of water being stored in reservoirs at the lower levels. Most of the firefighting water had to be taken from upper level reservoirs (600 to 1000 foot levels) where the storage capacity is lowest. The large numbers of firefighting apparatus



requiring water tapped the system's ability.

#### *Power failures*

The Laguna Beach County Water District experienced a power failure caused by the fire in auxiliary water pumping stations used to fill upper level reservoirs. This failure slowed the flow of water into critical upper level reservoirs. Power was restored in approximately 3 hours when a mobile generator from a neighboring water district was wired into the pump station. On-site secondary power sources, such as diesel or propane-powered generators, are not part of the Laguna Beach water system.

#### *Water Pressure*

During the height of the fire, Laguna Beach County Water District personnel, with assistance from five neighboring water districts, tripled the flow of water into city reservoirs. This water was pumped into reservoirs at lower elevations, then up to higher levels. Unfortunately, the District could not pump water into the higher level reservoirs as fast as it was being used. A 5-engine strike team, positioned to defend homes, could spray as much as 7,500 gallons per minute while water district pumping stations could only pump 4,400 gallons a minute up the hill to upper-level reservoirs. At that rate, supply was unable to keep up with demand. In addition, open valves in destroyed homes further decreased water pressure.

#### *Alternative Water Sources*

Some limited alternative water sources were available, both natural and man-made. Unfortunately most fire apparatus were not equipped with portable pumps or suction devices to make use of these water sources.

#### *Firefighting Strategies*

The amount of water pumped by one fire engine can affect the water pressure available for other engines hooked to fire hydrants on the same water main. The choice of firefighting strategies, type of agent (such as water, foam, or chemicals) selected, and the proper selec-

tion of defensible homes often determines the amount of water needed. Most firefighters, experienced in wildland-urban interface firefighting, know to select targets and tactics that maximize water conservation. In addition, Class A (wildland) foam was used successfully on a limited basis as an alternate to high volumes of water. Unfortunately, only a few of the department's engines are equipped with Class A foam capabilities.

### **Public Information**

The public information function during the Stagecoach, Laguna, and Ortega fires was handled on multiple fronts with information being disseminated by a variety of agencies and offices in addition to the Orange County Fire Department.

In the first five days, more than 8,000 calls were handled from the media and public (2/3 media, 1/3 residents); over the next five days the calls averaged between 200 to 250 per day on fire-related issues. Five telephone lines were in place and rang nonstop for two days and three nights.

On the Laguna fire, the on-scene PIO Information Center was situated at the Command Post at the city's Main Beach. The PIO staff there participated in interviews with over 250 media agencies, interacting with more than 500 reporters. During the first days of the fire, the information disseminated centered on the status of the fire, heroic efforts, and evacuation information; on the third day of the fire, the focus shifted to recovery and victim assistance, causes of the fires, and the investigation of problems concerning firefighting methods and prevention. In addition to media interaction, PIO coordinated press conferences, multi-agency joint PIO coordination, and government liaison requests.

When the fire was contained on Saturday, October 30, the Laguna on-scene information function was assumed by the Laguna Beach PIO. The OCFD on-scene PIO staff shifted to the department's headquarters PIO center to address the "after fire" issues and

information coordination of follow-up and mass media requests which continued through November.

**Communications Issues**

The Orange County Fire Department's Emergency Communication Center's (ECC) communication system was overloaded with emergency telephone calls and radio transmissions during the Stagecoach, Laguna, and Ortega fires.

*Telephone Systems*

The average daily number of emergency telephone calls received by ECC range from 200 on a slower day to 400 on a busy one. The graph on this page illustrates the phone activity prior to and after the Stagecoach/Laguna fires began: On October 27, 1993, ECC experienced a call load approximately 13 times greater than on the average day. During the busiest one hour on the 27th, ECC personnel answered 245 phone calls; this is about the same number of phone calls ECC answers in an average 24-hour period.

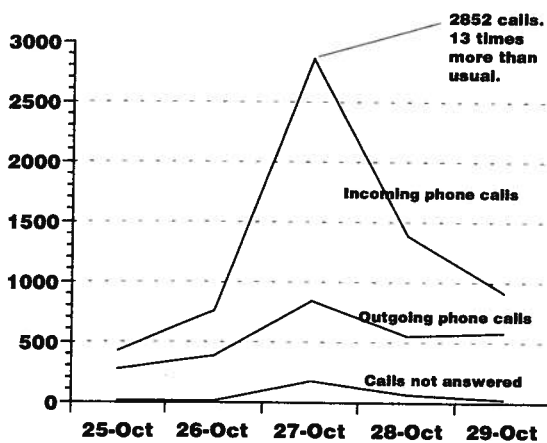
Orange County's 911 emergency system begins with an emergency telephone call from the public or another agency. The 911 call is answered at a Public Service Answering Point

(PSAP), located in the police department responsible for the jurisdiction from which the telephone call originates. The PSAP operator first determines the nature of the emergency, then transfers the emergency call to the proper agency for response. If the call requires the attention of the fire department, the caller is transferred to the appropriate fire department dispatch center. During the Stagecoach, Laguna, and Ortega fires, many 911 calls reporting the same incidents were screened by PSAP operators. This screening process minimized redundant calls to ECC. Unfortunately, during the height of these fires, 911 emergency lines were so congested that some emergencies were unable to be transferred to the Orange County Fire Department's ECC.

*Radio System*

The Orange County Fire Department is assigned to System 4 as their primary frequency of the county's 800 MHz fire radio system. This system uses six radio repeaters strategically placed throughout the county to give the most complete radio coverage to all Orange County fire units. The six repeaters allow a maximum of six radio users to access System 4 at the same time. A radio trunk system acts as an automated telephone operator and directs incoming radio transmissions to an open radio repeater. If all repeats are occupied, a busy signal is transmitted and no additional radio transmissions may be made until an open line (repeater) is available. The October 1993 fires had a significant impact on the radio system used by the Orange County Fire Department: as the fire's intensity increased and homes burned, radio calls multiplied drastically and overwhelmed the radio system.

During the Laguna fire, OCFD communications staff attempted to establish an incident-based radio communications system. An incident-based radio communications system requires the use of a repeater. When the communications staff attempted to take one of the department's 6 radio system repeaters offline to dedicate to the incident, the entire



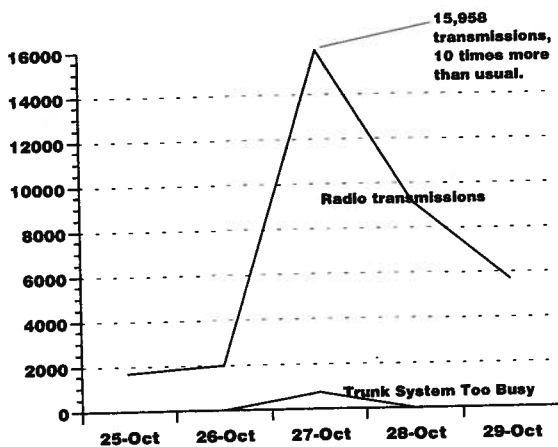
*Phone activity in OCFD's Emergency Command Center prior to and after the Stagecoach/Laguna fires began.*

system failed because radio traffic was so intense. Within minutes, communications staff, recognizing a system failure by a dramatic increase in unanswered radio transmissions, were forced to put the repeater back online. The existing system precludes the establishment of an incident-based radio communications system under intense-use conditions

Radio transmissions on October 27 increased approximately 10 times greater than an average day with a peak activity of almost 16,000 transmissions. The graph on this page illustrates the overall System 4 radio activity for the days between October 25, 1993 through October 29, 1993.

*Staffing*

During the fires, all off-duty OCFD dispatch personnel were called back to work. They worked up to 24 hours straight. OCFD made a mutual aid request for relief dispatchers as the fires continued to burn. Since dispatchers from other Orange County dispatch facilities (North and Central Net) are familiar with the computer and radio systems used by the department, they were asked to assist. ECC initiated 12-hour shifts, using 6 mutual aid dispatchers for each operational shift.



*Radio Transmission activity in OCFD's Emergency Command Center prior to and after the Stagecoach/Laguna fires began.*

*Fire Coordination Center*

ECC established the Fire Coordination Center at the beginning of the Laguna fire, but found it difficult to properly staff as most of the qualified members are Operations Bureau personnel—and all Operations Bureau personnel were needed on the fireline. Instead, ECC and headquarters secretarial staff were used to assist ECC in ordering and coordinating fire-fighting resources.

*The MACS System*

The Orange County Fire Department is a member of the Multi Agency Coordination System (MACS). MACS is a program created to coordinate mutual aid requests from agencies in need of firefighting and rescue resources. An important aspect of this program is the use of MACS conference calls. Originally, whenever the Southern California area was involved with multiple fires, participating agencies would send a member from their department to the Operations Coordination Center (OCC) in Riverside. Taking chief officers away from their department caused an inconvenience and hardship, so a conference call system was developed to replace the need to send representatives from each agency.

MACS conference calls were beneficial to the successful outcome of the Laguna fire. The calls furnished fire officers, who were responsible for making regional priority decisions, with immediate incident updates and potential threats. This timely information also allowed these officers to facilitate coordination and appropriate allocation of scarce resources. At the height of the Laguna fire, MACS calls were made every 3 to 4 hours. These calls became more intermittent as fires were contained and later controlled.

*Interagency Communications*

During the Stagecoach, Laguna, and Ortega incidents, multiple county agencies were involved to varying degrees. The common problem encountered at each incident was the lack of a compatible radio system for interagency



*Destruction at El Morro Mobile Home Park. Forty-four homes in the mobile home park burned. Poor access due to narrow streets, limited water, and exploding liquid propane tanks complicated firefighting efforts.*

coordination. Firefighters and law enforcement officers worked together to evacuate over 24,000 residents without the aid of radio communications. Also, fire department and Environmental Management Agency (EMA) personnel worked together to assess damage and determined whether damaged property was safe for residents to inhabit. All of these functions had to be coordinated in person, which was extremely labor-intensive. This experience suggests the need for a common communications link between county fire, law enforcement, and public works agencies.

### **Fuel Modification/Prescribed Burning**

The 550 acre Boat Canyon fire in 1979 burned during Santa Ana wind conditions and threatened the community of Emerald Bay, requiring

an extensive commitment of firefighting resources to save homes. At the time, fuel modification in the area consisted of the Laguna fuelbreak which provided only a narrow strip of cleared vegetation immediately adjacent to the community. The Boat Canyon fire burned to the edge of this break. Following the fire, renewed consideration began for prescription burning in the area as a fire protection alternative. With continuing fire protection concerns, the Orange County Fire Department initiated the Emerald Canyon vegetation management project to the communities of Emerald Bay and Laguna Beach.

Emerald Canyon is pointed like a gun barrel at the community of Emerald Bay. In 1986, the Orange County Fire Department designated Emerald Canyon as a high priority for a prescribed burn. The Emerald watershed was

a high risk for development of hot and fast-spreading wildfires; its old and dense stands of native chaparral were ready, cured fuel.

Hillside construction within Emerald Bay and the nearby City of Laguna Beach included many wood shingle roofed structures, narrow streets, and other features that make these communities difficult to defend from such a fire. Prescribed burns would reduce hazardous brush concentrations, resulting in lower wildfire intensity and fire control opportunities.

In January, 1990, the OCFD conducted a prescribed burn of the first 530 acres in Emerald Canyon immediately adjacent to the community of Emerald Bay. Although the burn reduced extremely hazardous fuel accumulations by October, 1993, fuels within this site had regrown to enough density to contribute to the Laguna Fire. However, had there been no prescribed burn, the firefront that hit Emerald Bay during the Laguna fire could have been even more severe.

An additional 550 acres in the upper Emerald watershed had been proposed for burning for the last 3 years. This second burn was delayed by concern for environmental protection of coastal sage scrub habitat, threatened and endangered species, including the California Coastal Gnatcatcher and the Cactus Wren, inhabiting the proposed burn site.

Environmentalists and county authorities developed constraints under which burning could be continued. These conditions were authorized in early 1993, and the department made plans to initiate prescribed burning at the earliest possible opportunity. Rain delays and prolonged periods of high fire danger reduced opportunities to conduct the second burn.

Forecasts indicated favorable conditions would likely exist in late November or December of 1993. Emerald Canyon prescribed burning plans were scheduled; however, the Laguna fire started in Laguna Canyon on October 27th and made its first major run through the entire proposed burn site into Emerald Bay.

## **Fire Investigations**

Investigation of the fires occurring in Orange County began immediately at the onset of the incidents and included coordinated communication among local, state, and federal agencies. Investigators from all agencies have worked to share information and leads that may be of benefit to the responsible investigating agency of each fire.

OCFD's Investigation Section received assistance from the Orange County District Attorneys Office, State Fire Marshal's Office, Orange County Sheriff's Department, US Forest Service, California Department of Forestry, Laguna Beach Police Department, Anaheim Fire Department, Westminster Fire Department, and Fullerton Fire Department.

### *Stagecoach Fire*

The Stagecoach fire started within the City of Anaheim, and the investigation was handled by investigators from the Anaheim Fire Department. Orange County Fire Department investigators maintained close communications with the investigators from the City of Anaheim to share information. Investigators from the Laguna Fire Investigation Task Force assisted Anaheim with interviews that helped lead to the arrest of a juvenile in connection with the fire.

### *Laguna Fire*

Upon initial report of the Laguna fire, an Orange County Fire Department investigation team responded to the incident. Two fire investigators, along with an Orange County Deputy District Attorney, arrived shortly after initial suppression companies and immediately began a cause and origin investigation of the fire. The early response to Laguna Canyon was critical in establishing the area of origin and identifying key witnesses to the early events surrounding the fire. The fire was found to have started along Laguna Canyon Road, within unincorporated Orange County.

To manage the magnitude of the Laguna Investigation, an investigations coordination

center and a system to effectively track work assignments and lead information was established.

On November 1, OCFD representatives and a deputy district attorney attended a briefing at the Los Angeles office of the U.S. Department of Treasury, Bureau of Alcohol Tobacco and Firearms. The meeting was established as a forum for all fire and law enforcement agencies involved with criminal fires in Southern California to share related information necessary to apprehend individuals responsible. These weekly meetings continued for several weeks following the California fires and established critical contacts within the respective agencies.

OCFD, in coordination with the California Department of Forestry, Southern Region, and other local fire agencies, established a multi-agency Investigation Task Force. On November 2, Orange County Fire Department and CDF staff completed resource coordination, and personnel from throughout California arrived for an initial briefing and assignments on the morning of November 3. The task force consisted of investigators from the Orange County Fire Department, Orange County District Attorney's Office, City of Laguna Beach Fire Department, California Department of Forestry, California State Fire Marshal's Office, and Orange County Fire Chief's Fire/Arson Investigators Section with representatives from the City of Orange, Garden Grove, and Westminster assisting.

At the height of the investigation, the Laguna fire Investigation Task Force had 14 investigators assigned full-time to the incident. The team followed-up on every lead by telephone or personal interview, attended numerous briefings and meetings, provided documentation, mapping, and photography.

In an effort to ensure that every possible avenue was utilized to identify possible witnesses and lead information, distribution of a flyer requesting citizen assistance with information related to the Laguna fire. Over 4,000 flyers were distributed at a coordinated traffic stop on Laguna Canyon Road.

This multi-agency investigation task force was new for Orange County and proved to be successful. During its operation the task force collected information on numerous suspects, established an information data base, and assisted in the arrest or criminal filing on several suspects in other fires or related crimes.

The Laguna fire investigation remains a priority for the department and is currently considered to be an open criminal fire investigation.

#### *Ortega Fire*

An OCFD investigation team was sent to the Ortega fire shortly after it was reported. The fire was determined to have started in the Cleveland National Forest within the County of Riverside. The USFS and CDF are handling the investigation with coordinated communication and information sharing with the Orange County Fire Department.

#### *Additional Fires*

Several additional small incendiary fires that occurred during this same period are being investigated by the Orange County Fire Department investigations staff. One which has been determined to be arson occurred in the City of Dana Point. The second fire, also arson related, occurred in Capistrano Beach and burned a small area of grass. A third fire, which also has been determined to be arson, was started on the border of O'Neill Regional Park in Rancho Santa Margarita.



# Lessons Learned

## **Wildland-Urban Interface**

### *Lessons learned*

Over the past 50 years, devastating wildland-urban interface fires have steadily increased in frequency and intensity. In response, state lawmakers have taken legislative action. Initial actions on Assembly Bill 337, the Bates Bill, began shortly after the Oakland-Berkeley, East Bay Hills conflagration in October, 1991. This fire killed 25 people, destroyed over 3,000 structures, and was the single largest dollar-loss fire in United States history. Assembly Bill 337's intent is to identify Very High Fire Hazard Severity Zones within the state, and set specific roofing and brush clearance requirements for structures within these zones.

A "Very High Fire Hazard Severity Zone" is defined as any geographical area, public and private lands, which, due to the type and condition of vegetation, topography, and/or development, potentially increases the possibility of wildland or conflagration-type fires. Criteria for Very High Fire Hazard Severity Zones were established using existing standards from sources such as the National Fire Protection Administration (NFPA), Public Resources Codes (PRC), Public Utility Codes (PUC), Federal Emergency Management Agency (FEMA), and the Insurance Services Office (ISO).

The severe fire dangers inherent to the county's wildland-urban interface must be mitigated, and government has the lead role in making it happen. A partnership between government and the public working together for fire safety will go a long way towards reducing the loss of property and life from future wildfires.

### *Actions/Recommendations*

Within days of the successful suppression of the devastating fire storms, Orange County fire officials announced the establishment of a Wildland-Urban Interface Task Force to study the problem and produce 3 critical documents by July, 1994: (1) a safer model development standard for the county's wildland-urban interface, (2) recommendations for retroactive mitigation measures to be taken in already developed areas, and (3) a model wildland-urban interface inspection and enforcement program. These documents will enhance State Assembly Bill 337 and make the county's wildland-urban interface less vulnerable to the destructive forces of wildfire.

The county's wildland-urban interface task force is comprised of representatives from fire departments, local governments, water districts, civic and environmental groups, and the building and insurance industries. Ultimately, this task force will make recommendations for building and fire code revisions to help mitigate the wildland-urban interface problem in Orange County. Without the adoption of these recommended code changes by the County Board of Supervisors and individual city councils, the wildland-urban interface fire problem will continue to intensify.

## **Incident Management**

### *Lessons learned*

The FIRESCOPE Program (Firefighting Resources of California Organized for Potential Emergencies) is designed to maintain and enhance multi-agency firefighting resource management. Resource coordination systems such as MACS and incident management systems such as ICS are the results of FIRESCOPE.



Many fire departments throughout the state provided critically needed resources to Orange County during the recent firestorms. Likewise, Orange County provided critically needed resources to the Cabazon, Green Meadow, and Old Topanga fires in other counties. During the Southern California firestorms these FIRESCOPE resource and incident management systems worked well. Complete cooperation between individual fire agencies—and their commitment to shared resources—are what makes FIRESCOPE and the California Fire Mutual Aid System a success.

#### *Actions/Recommendations*

Because of the proven track record of the fire service incident management system, state legislators recently passed Senate Bill 1841, the Petris Bill. This legislation mandates that all state agencies and all local agencies receiving state disaster assistance funds develop and use a standardized emergency management system. A major incident cannot be handled by one or a few agencies, but requires the coordinated commitment of every element of local, state, and federal government in cooperation with private industry and community volunteer organizations.

### **The County's Response**

#### *Lessons learned*

Almost all aspects of county government became involved to some degree in the firestorms. Fire, law enforcement, and environmental management provided for public safety, while others played key coordination, planning, logistical, financial, and political roles. Each worked together to support the goal of final mitigation and recovery. Increased familiarity with the county's disaster plan is necessary to ensure a coordinated response to the next disaster.

#### *Actions/Recommendations*

The Orange County Fire Department continues to conduct regular training exercises of its emergency operation plans and participates in

all countywide disaster drills. All agencies should commit to regular training and periodic exercise of the county's disaster plan. A well organized and consistently exercised plan is vital to providing an effective, coordinated response to disasters.

### **Pre-Incident Preparation**

#### *Lessons learned*

Pre-incident preparation is often a matter of determining the potential threat, weighing the risks, and evaluating the cost of increasing preparedness. All sections of the OCFD were aware of the potential threat, numerous mitigation measures had already been taken, and final preparation plans had been made and scheduled for 8:00 a.m., Wednesday, October 27. The Orange County Fire Department, and the entire County of Orange, should always be operationally prepared and physically capable of responding to any threat at any time.

#### *Actions/Recommendations*

The Orange County Fire Department has reaffirmed its commitment to consistent monitoring of fire weather conditions and the reinforcement of its initial response capabilities as extreme fire weather conditions develop.

### **Aircraft**

#### *Lesson learned*

Aircraft were invaluable tools during the recent wildland-urban interface fires. Since the Orange County Fire Department does not have its own firefighting aircraft and other agencies' aircraft were committed to other fires, the initial attack advantage of aircraft was lost on the Stagecoach, Laguna, and Ortega fires. Aircraft greatly contributed to the ultimate control of these fires and the saving of many other homes and possibly lives. Availability of other agencies' aircraft as an initial attack resource is extremely limited. Aircraft are a key to rapid control of wildfire and a vital factor in limiting a wildfire's potential for developing into a major conflagration.

*Actions/Recommendations*

A separate report with recommendations for an OCFD helicopter program has been prepared for Orange County Board of Supervisors consideration.

**Communications**

*Lessons learned*

Even as modern and sophisticated as Orange County's 800 MHz fire radio system is, it does have limits. The activity level on the Laguna fire pushed Orange County Fire Department's radio communication system past the limit, and some failures occurred. During the peak hours of the Laguna fire, the department's radio and telephone communications systems were severely overloaded, leaving many radio transmissions and telephone calls unanswered.

This does not appear to be solely a radio/telephone system problem, but also equipment familiarization and radio/telephone usage discipline problem.

Also, without compatible radio systems, Orange County's law enforcement and fire agencies were limited to telephone, face-to-face, and other sometimes insufficient means of communication.

*Actions/Recommendations*

Existing communications policies will be reinforced, and a standard operating procedure for radio/telephone use and discipline will be developed and strictly enforced. The department's Communications Section has been instructed to develop a plan for the establishment of a Fire Coordination Center (FCC). This FCC will be activated on all major incidents to coordinate incident-related requests.

**Public Information**

*Lessons learned*

The public information function was handled in multiple locations, with a variety of agencies giving out information in addition to Orange County Fire Department public information staff. The central coordination of an incident's information dissemination could be improved. The frequent communication among information control sites (on-scene PIO's, Fire Information Center at HQ, and the Emergency Operations Center [EOC]) is dependent on limited conventional communication methods, such as radios and telephones. When a major incident involves large areas, impacts county-wide populations, or escalates beyond 4 hours, these conventional communication methods are likely to breakdown.

*Actions/Recommendations*

Strategies are being developed to ensure that incident information can be transmitted among on-scene PIO's, Fire Information Center at HQ, and the Emergency Operations Center and translated into accurate, uniform media and public updates.



Photo courtesy of Orange County Register.

## **Emergency Operations Center (EOC)**

### *Lessons learned*

Due to limited personnel and jammed telephone lines, a lack of communication with the Fire Coordination Center (FCC) and the field Incident Command Post (ICP) created a gap in the EOC communication process. The Fire Department's FCC and ICP coordinated incident status and resource information effectively, but an effective communication link with the EOC was never established. Information provided to the EOC was limited and not always up-to-date.

### *Actions/Recommendations*

A list of recommended actions to correct deficiencies are being developed by the Emergency Management Division for consideration by the Emergency Management Council at their next regularly scheduled meeting.

## **Hazard Mitigation**

### *Lessons Learned*

Like earthquakes and drought, wildland fires are a part of the natural order of life in Orange County. We can take, however, certain mitigation measures to lessen the impact of these natural events. We have developed outside sources for water and taken water conservation measures to combat drought and developed standards to keep our homes and buildings from falling on us during earthquakes. We have learned that fire prevention, public education, fire and building code standards, and firefighting capabilities must be enhanced to lessen the impact of wildland-urban interface fires. We must assure that hazard mitigation programs remain a primary objective.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288, as amended) is the basis for federal post-disaster hazard mitigation programs. These federal programs go into effect when the President of the United States signs a major disaster declaration. The Stafford Act authorizes two principal hazard mitigation programs: Hazard

Mitigation Planning, and the Hazard Mitigation Grant Program (Sections 409 and 404 of the Act, respectively). With the Presidential Declaration of Major Disaster for the California firestorms on October 28, benefits of the Stafford Act are now being made available to affected local and state governments.

### *Actions/Recommendations*

Immediately following the disaster declaration, federal, state, and local fire officials gathered to evaluate the natural hazards in the affected areas and identify mitigation activities that must be incorporated into disaster assistance programs and overall recovery. This process resulted in the pre-identification of possible measures for funding under the federal Hazard Mitigation Grant Program. Requirements include the preparation of a state hazard mitigation plan and affected local government hazard mitigation plan(s) which are then annexed to the state's plan. The Orange County Fire Department has appointed hazard mitigation officers to work with state and federal mitigation officers to complete the planning process.

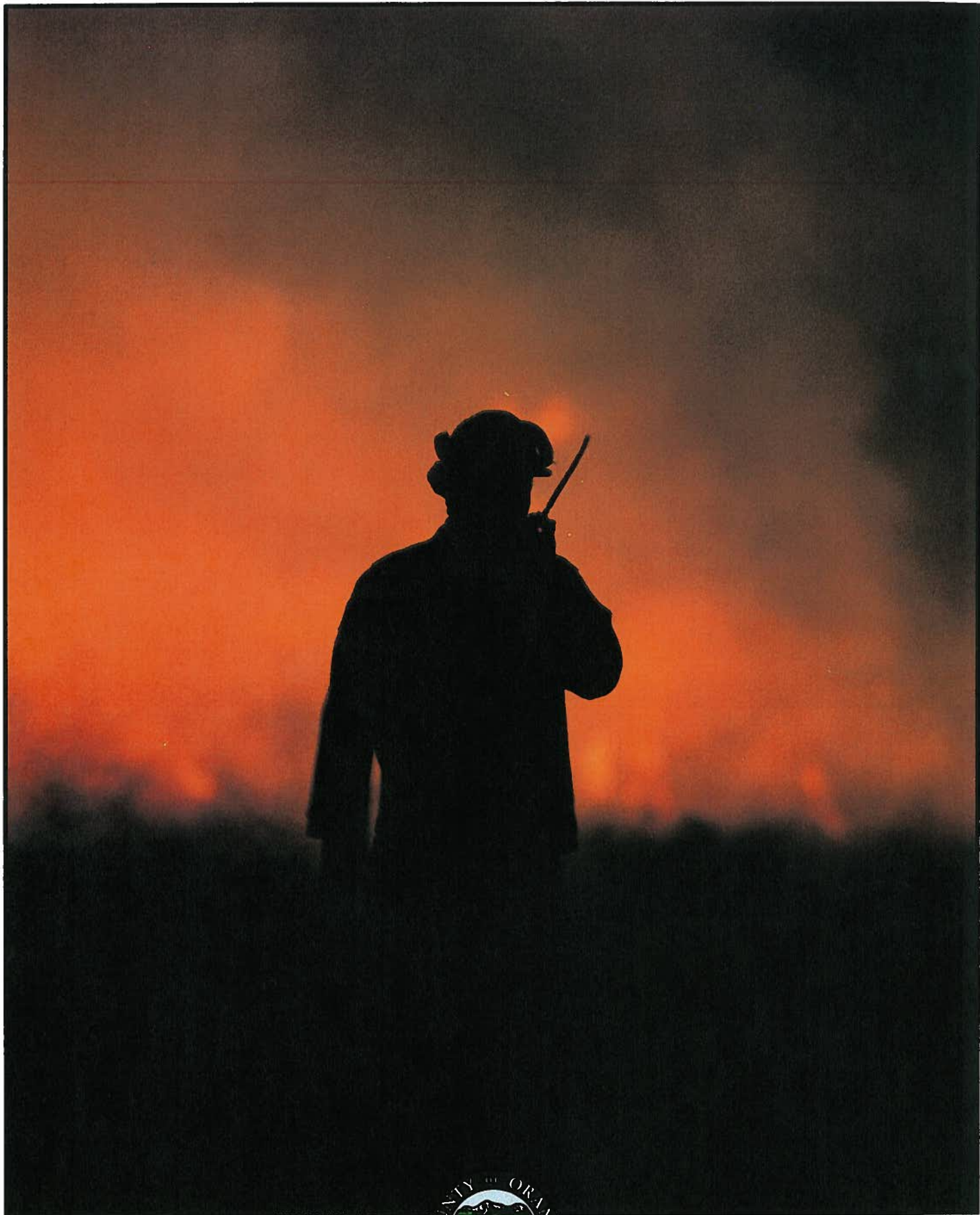
Following the presidential major disaster declaration, the Hazard Mitigation Grant Program was activated. This program's purpose is to fund projects which are cost-effective and which substantially reduce the risk of future damage, hardship, loss, or suffering resulting from a major natural disaster. The Orange County Fire Department filed a Notice of Interest with the Federal Emergency Management Agency (FEMA) and is currently preparing a grant application. Some specific mitigation measures identified after the Firestorm of October-November 1993, are listed below:

- Retrofit fire apparatus with Class A foam production capabilities.
- Addition of portable pumps to fire apparatus compliments to pump water from natural or man-made sources.
- Enhance the County radio communication system, specifically in the coastal areas of Orange County.

- Develop a fire department air operations section and purchase helicopters and equipment.
- Provide Forward Looking Infrared (FLIR) systems for Sheriff's Department helicopters.
- Provide a video downlink from a helicopter to incident command to assist in developing incident strategic objectives.
- Build a command and communications vehicle to improve communications with out of area resources from the Incident Command

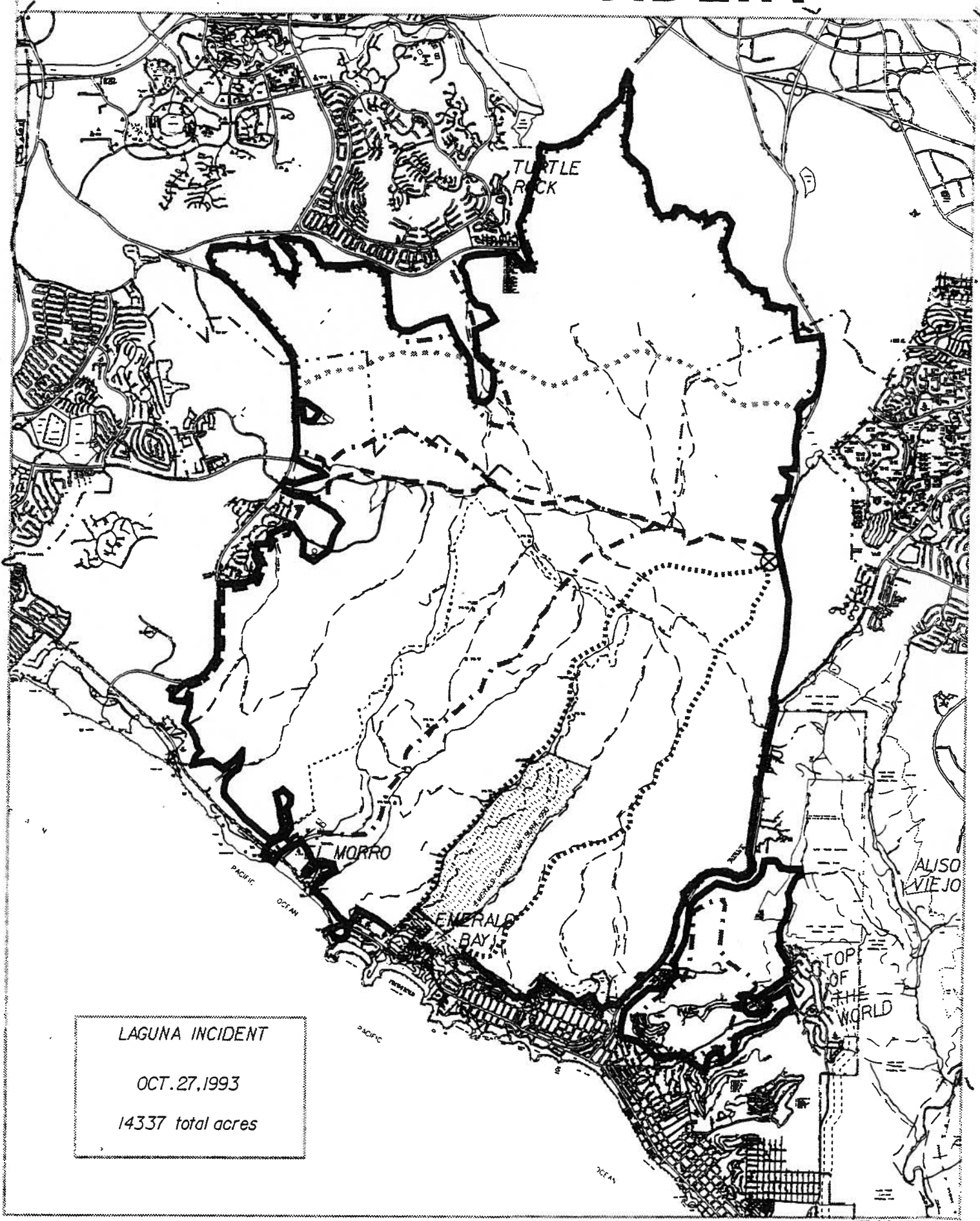
Post (ICP) to the Emergency Communications Center (ECC) to the Emergency Operations Center (EOC).

- Develop a wildland-urban interface community education program.
- Develop emergency plans specific to Very High Fire Hazard Severity Zones as identified under the requirements of State Assembly Bill 337.
- Produce safer building and fire code standards and a model inspection program for the county's wildland-urban interface areas.

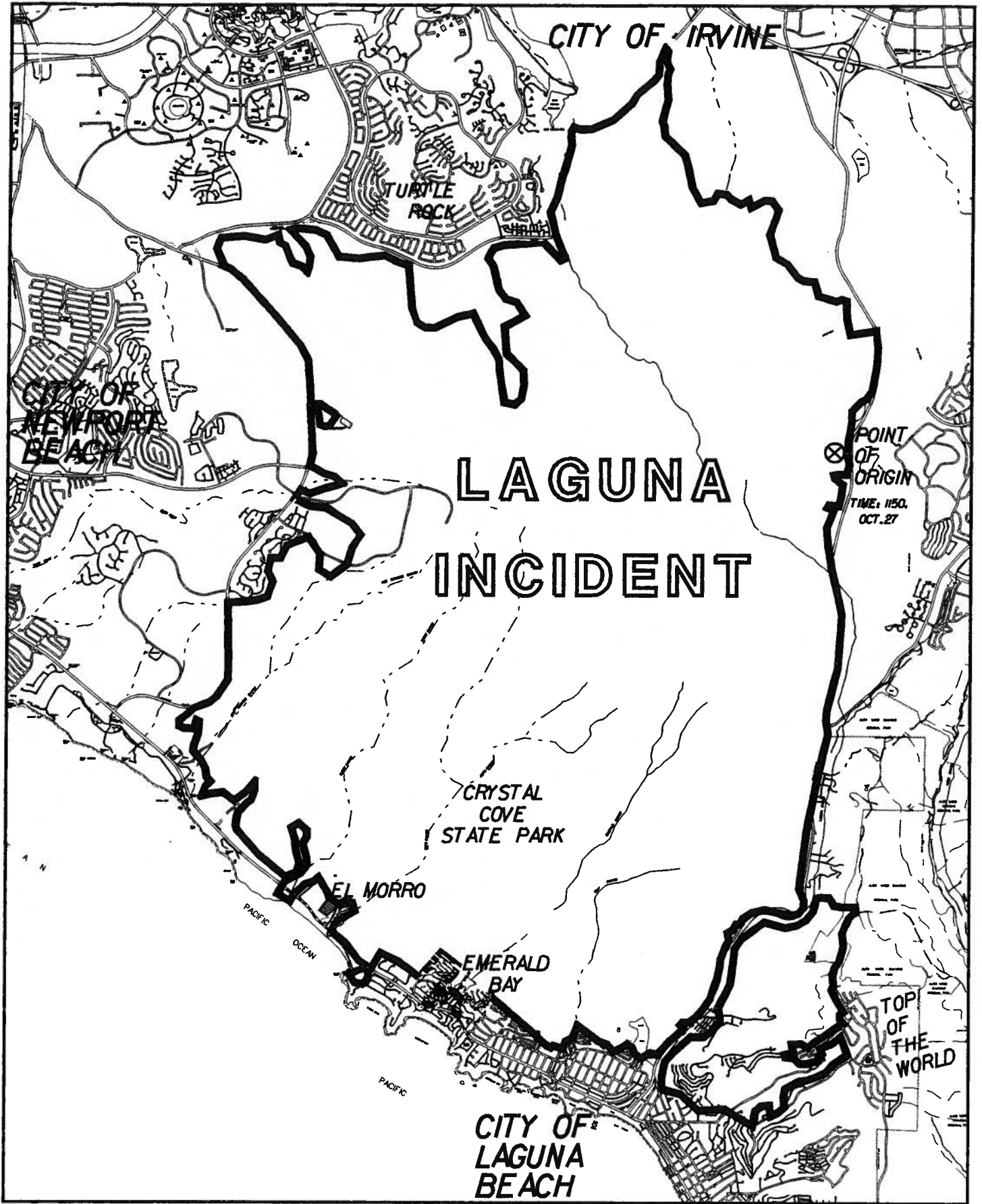


Cover photos courtesy of the Orange County Register.

# LAGUNA INCIDENT



LAGUNA INCIDENT  
OCT. 27, 1993  
14337 total acres



CITY OF IRVINE

TURTLE ROCK

CITY OF NEWPORT BEACH

# LAGUNA INCIDENT

POINT OF ORIGIN  
TIME: 1150.  
OCT. 27

CRYSTAL COVE STATE PARK

EL MORRO

EMERALD BAY

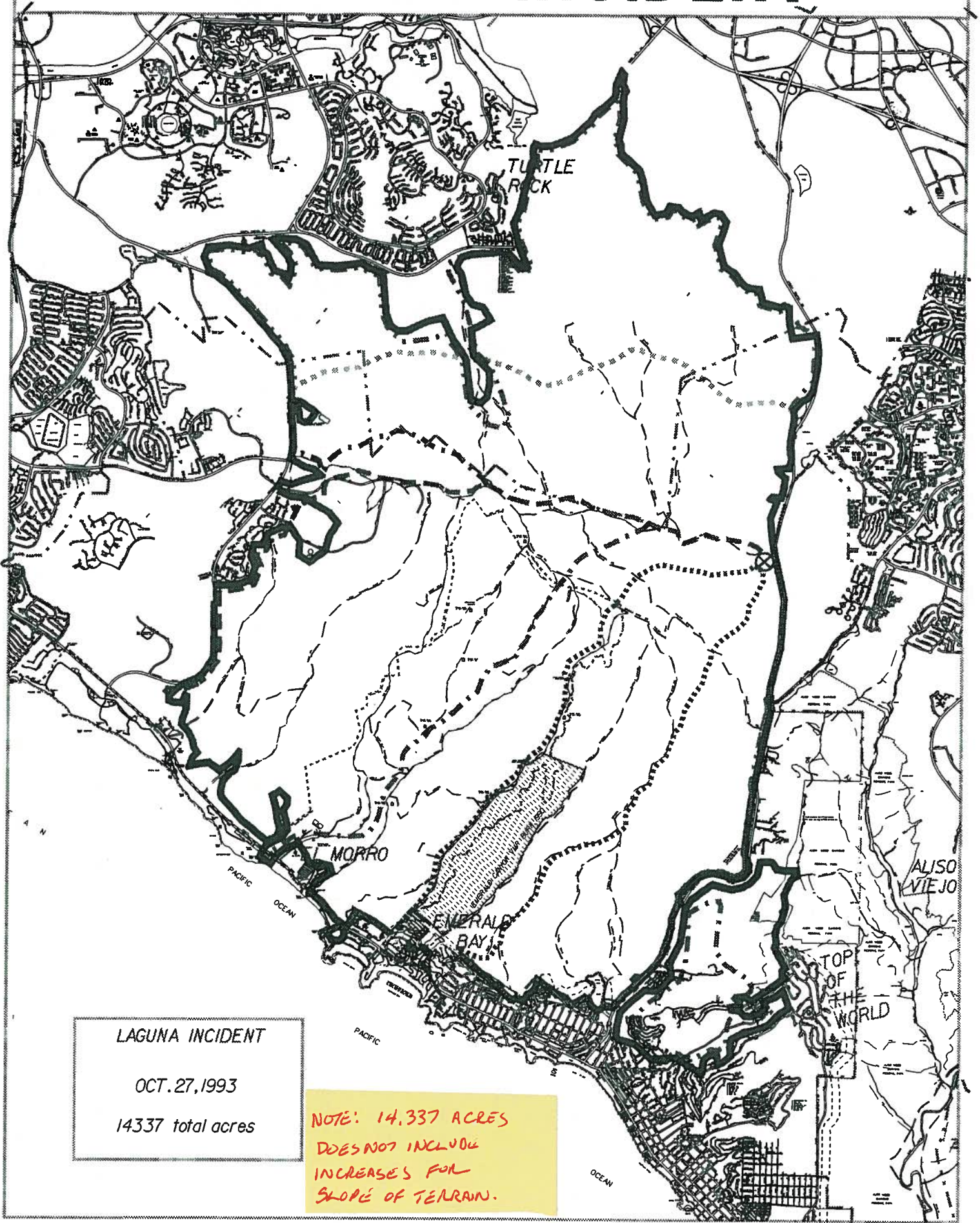
CITY OF LAGUNA BEACH

TOP OF THE WORLD

PACIFIC OCEAN

PACIFIC

# LAGUNA INCIDENT



LAGUNA INCIDENT

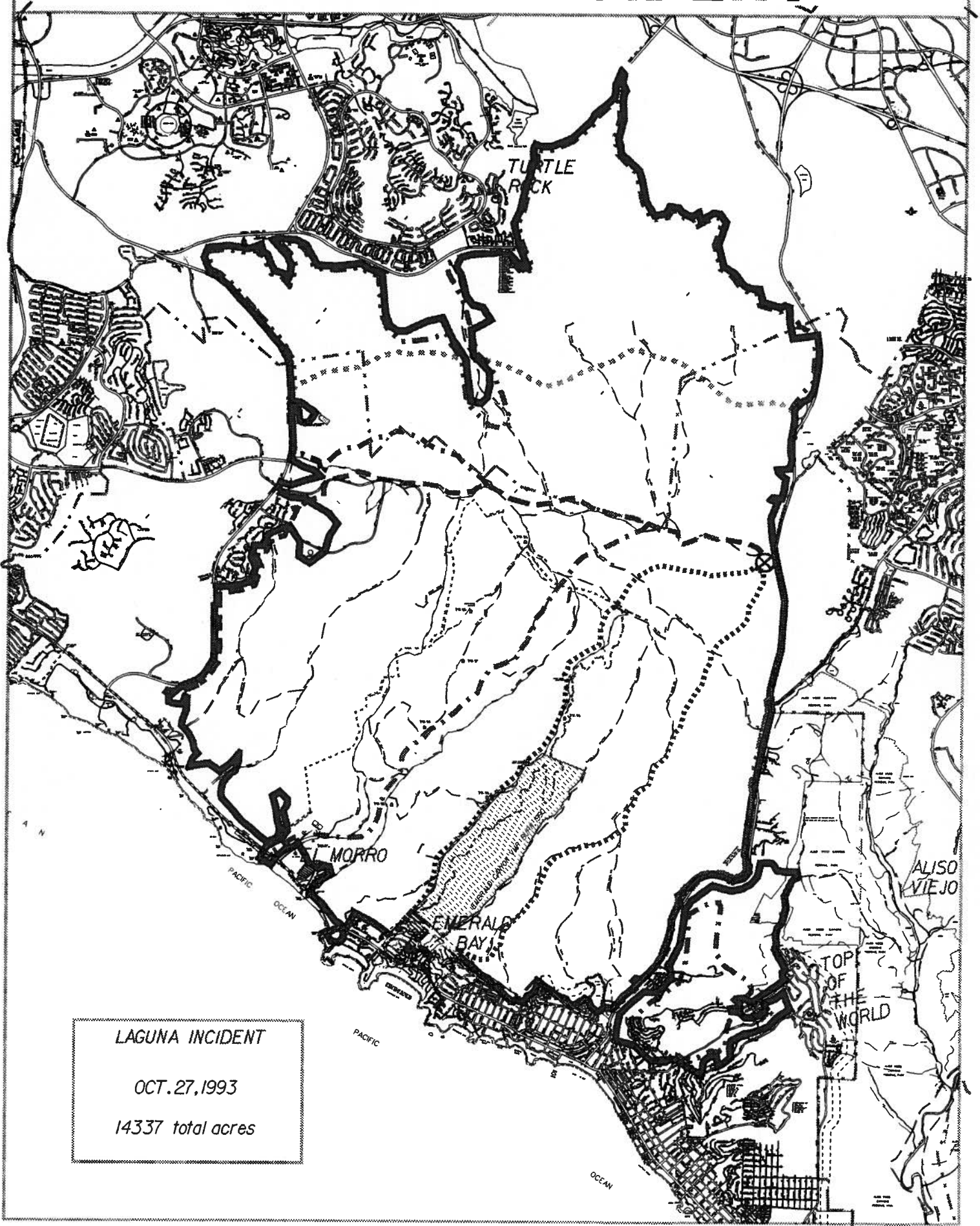
OCT. 27, 1993

14337 total acres

NOTE: 14,337 ACRES  
DOES NOT INCLUDE  
INCREASES FOR  
SLOPE OF TERRAIN.



# LAGUNA INCIDENT



LAGUNA INCIDENT

OCT. 27, 1993

14337 total acres

# LAGUNA INCIDENT

