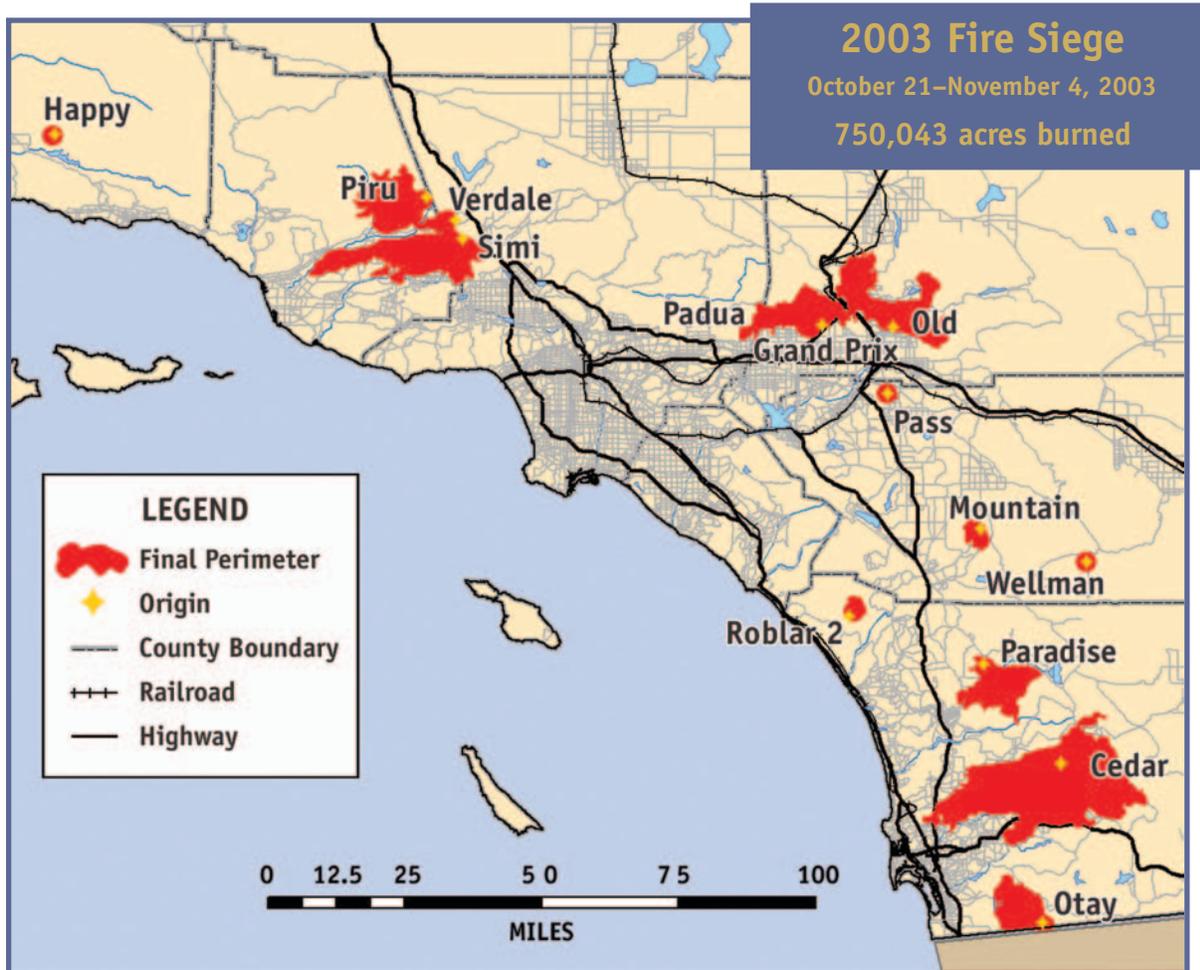

Appendix & Glossary of Terms

Appendix I

Statistical Information



Incident Duration and Major Resources Allocated

Incident	OCT 21	OCT 22	OCT 23	OCT 24	OCT 25	OCT 26	OCT 27	OCT 28	OCT 29	OCT 30	OCT 31	NOV 1	NOV 2	NOV 3	NOV 4
Roblar 2															
Grand Prix															
Padua															
Pass															
Piru															
Verdale															
Happy															
Old															
Simi															
Cedar															
Paradise															
Mountain															
Otay															
Wellman															
Helicopters	15	20	33	32	36	45	68	65	54	77	81	77	74	33	37
Engines	85	111	188	298	585	902	1,163	1,572	1,603	1,670	1,716	1,608	1,083	643	427
Personnel	1,166	1,877	2,755	4,770	7,039	8,355	11,106	13,371	13,146	12,922	14,027	13,412	9,324	6,930	5,496
Acreage	1,750	6,430	10,772	21,367	113,281	360,750	518,223	580,987	668,200	736,663	739,507	739,597	739,597	739,597	750,043

Data used above was extracted from the Incident Status Summary (209) or best available data for each fire.

Weather Patterns

CAJON WEATHER STATION

Date	10/21	10/22	10/23	10/24	10/25	10/26	10/27
Max Temp(Degr F)	103	99	97	96	96	91	96
MinRh (%)	7	8	10	8	6	6	9
Wind(mph)	NW6G11	NW8G18	NW8G17	NW9G26	N14G42	NE18G38	NE10G30
Date	10/28	10/29	10/30	10/31	11/1	11/2	11/3
Max Temp(Degr F)	93	78	65	60	61	61	52
MinRh (%)	10	18	60	52	55	54	77
Wind(mph)	NW7G14	SE10G18	SW11G23	SW8G20	SW6G14	SW5G13	S7G13

JULIAN WEATHER STATION

Date	10/21	10/22	10/23	10/24	10/25	10/26	10/27
Max Temp(Degr F)	92	92	92	88	84	69	77
MinRh (%)	14	13	14	10	9	18	12
Wind(mph)	E6G15	E6G15	W5G16	E6G15	E5G15	E22G49	E16G32
Date	10/28	10/29	10/30	10/31	11/1	11/2	11/3
Max Temp(Degr F)	88	67	50	45	46	44	43
MinRh (%)	25	100	100	100	100	100	100
Wind(mph)	E4G11	W16G30	W22G43	W16G34	W14G26	W14G26	W22G35

SIMI VALLEY WEATHER STATION

Date	10/21	10/22	10/23	10/24	10/25	10/26	10/27
Max Temp(Degr F)	100	95	97	99	95	91	95
MinRh (%)	8	13	6	9	7	8	9
Wind(mph)	E8G14	E7G13	E9G14	NE14G22	E21G31	E19G26	E15G21
Date	10/28	10/29	10/30	10/31	11/1	11/2	11/3
Max Temp(Degr F)	73	68	59	63	63	57	64
MinRh (%)	34	44	49	41	42	76	73
Wind(mph)	SW13G18	SW12G27	SW13G28	SW5G15	SW10G18	SW8G18	W9G16

There are three factors that influence wildland fires: weather, fuels and topography. Southern California's Mediterranean climate creates weather patterns each year of high temperatures, low humidity, and strong winds. Despite these factors, most fires (97 percent) are stopped and controlled at less than 10 acres. However, each year there is a potential for a weather pattern to create conditions that make "initial attack" control nearly impossible. This pattern, known as the Santa Ana Winds, is a phenomenon of strong, dry, east winds that blow from the deserts to the sea. When they surface, a fire not controlled or a new fire start is seemingly impossible to control and firefighters must go on the defensive. Southern California experiences the Santa Ana Winds each year during the fall and winter months. Fire officials hope they will occur after the rains have come and the vegetation is green, thereby reducing fire intensity.

As fire weather forecasters began predicting Red Flag conditions, fire officials began preparing for additional fires by augmenting current staffing levels. However, when the Santa Ana Winds struck, with multiple fires already burning, the condition for a "perfect fire storm" was set.

The following is a weather synopsis for the October "2003 Fire Siege":

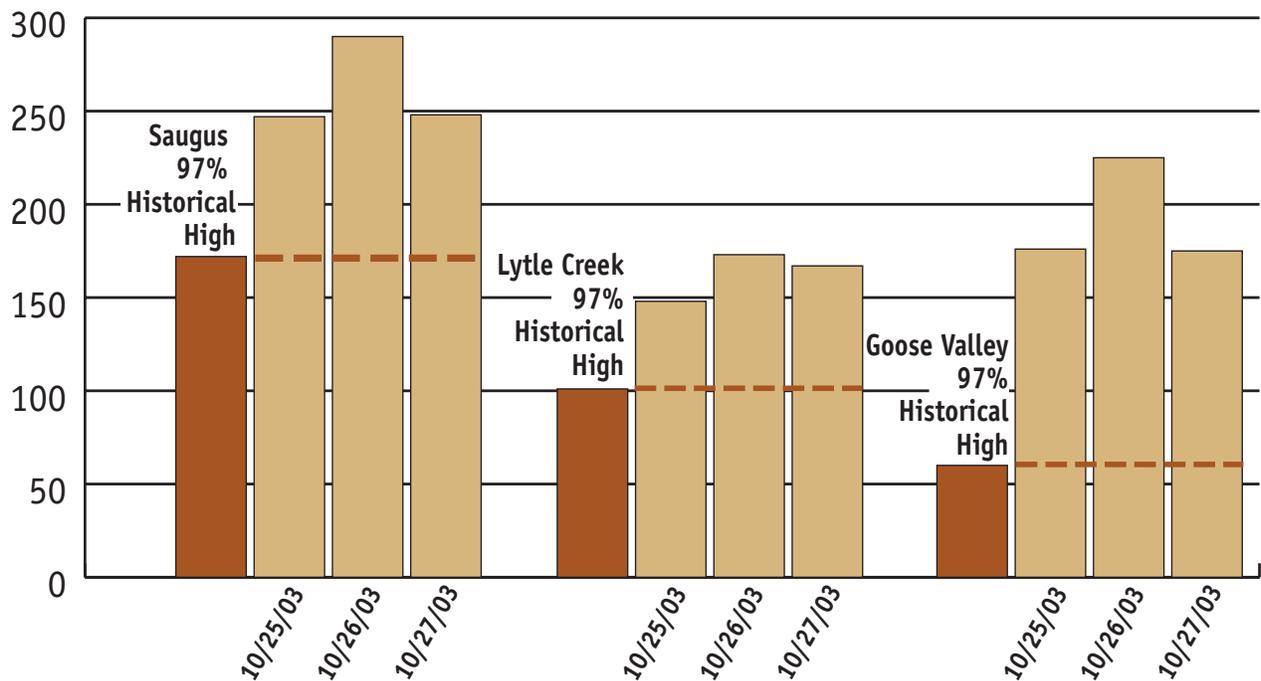
An unseasonably strong ridge of high pressure over the state provided hot and dry weather conditions over California from October 21st through October 27th. Temperatures initially were at record levels, and generally 10 to 20 degrees above normal during this period. Humidities were extremely low with afternoon readings below 10% in most areas while nighttime humidities barely reached 20 to 30% in most areas. Winds during this period began rather light, with northeast winds 5 to 15 mph over the mountains and through and below some canyons and passes, shifting to southerly each afternoon the first few days. A cool

trough dropping south through Arizona brought a stronger offshore flow with stronger northeast winds beginning October 25th. In some wind prone areas, over the mountains and below and through canyons and passes, these winds reached sustained speeds of 15 to 25 mph with local gusts to 40 mph or stronger, and remained at those levels through October 27th.

A pacific trough approached the state on October 28th. This caused offshore winds to decrease that morning, and turn southwesterly that afternoon, with a stronger push inland toward the mountains. The southwest winds continued strong in some areas the night of October 28th and into the next day. But these winds brought significantly higher humidity and cooler temperatures with them each day as the marine layer thickened to near 6,000 feet by October 30th. By October 30th, temperatures were 10 to 15 degrees below normal, and afternoon humidity was 50 to 100% over much of the fire area. The trough provided heavy rain the first few days of November over Ventura county fires while spotty showers occurred over the remainder of the fire area. The trough provided cool temperatures and high humidity from October 30th through November 4th.

Burn Index

An important aspect of the weather story during the siege were the record breaking burn index (BI) figures. The chart below shows the record setting BIs for three representative areas of the California Fire Siege of 2003. Burn index is an open ended scale calculation determined from the National Fire Danger Rating System (NFDRS). It is used to predict flame length, a measure of heat intensity. A BI of 51–70 indicates high fire danger; a BI over 90 is extreme. BI/10=flame length. For example a BI of 60 predicts a six foot flame.



Appendix 2

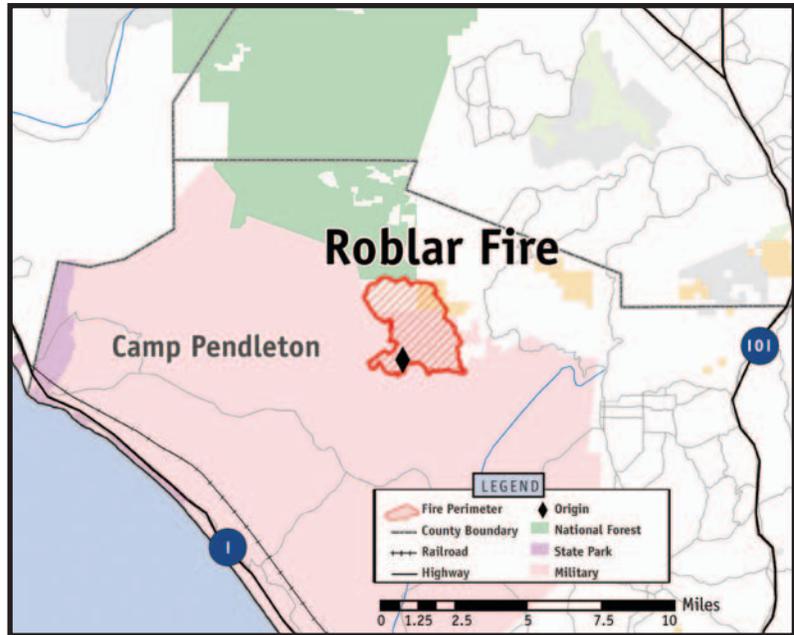
Fire Summaries

Roblar 2

Oct. 21–Nov. 4, 2003

- Total Acres: 8,592
- Estimated Suppression Cost: \$5.4 million
- Firefighters Assigned at Peak: 1,313
- Residences Destroyed: 0
- Lives Lost: 0
- Communities Evacuated: De Luz
- Cause: Under Investigation
- Fuel Type: Grass and brush

The Camp Pendleton Commander ordered the construction of an extensive fuel break network after the first Roblar Fire in 1985. Over 100 miles of fuel breaks had been constructed prior to the start of the Roblar 2 Fire. Initial attack forces used these existing fuel breaks to contain a portion of the fire the first night. Chief Officers recognized the potential for a complex firefight as the fire spread onto adjacent jurisdictions and threatened communities. On October 21, a Federal Regional Team was ordered. The team's strategies and tactics were successful and by October 26, they were able to quickly demobilize their resources, making them available for new fire starts in the region. This quick demobilization was accomplished through close coordination with South Ops.



Pass

Oct. 21–Oct. 23, 2003

- Total Acres: 2,387
- Estimated Suppression Cost: \$1,729,417
- Firefighters Assigned at Peak: 696
- Residences Destroyed: 5
- Lives Lost: 0
- Communities Evacuated: Reche Canyon, North Moreno Valley
- Cause: Human
- Fuel Type: Grass, light to medium brush

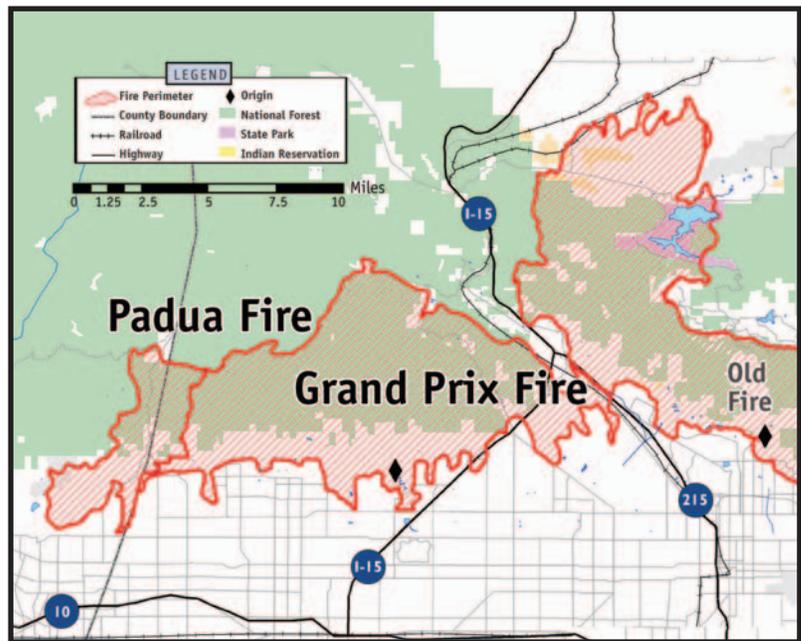
The Pass Fire grew quickly, burning structures and causing civilian injuries. The initial attack incident commander used an aggressive strategy to stop the fire spread and limit damage. On Oct. 23, resources were kept on the fire to secure lines before the predicted wind event arrived.



Grand Prix/Padua

Oct. 21–Nov. 4, 2003

- **Total Acres:** Grand Prix 69,894, Padua 10,446
- **Estimated Suppression Cost:** Grand Prix \$11,600,000, Padua \$1,200,000
- **Firefighters Assigned at Peak:** Grand Prix 2,500, Padua 773
- **Residences Destroyed:** 194
- **Commercial Structures Destroyed:** 1
- **Other Structures Destroyed:** 60
- **Lives Lost:** 0
- **Communities Evacuated:** Hunter Ridge, Alta Loma, Etiwanda, Rancho Cucamonga, Upland, Glen Helen, San Antonio Heights, Mount Baldy Village, Claremont, La Verne, Palmer Canyon, Claremont, Rancho Cucamonga, Mt Baldy Village, Lytle Creek, Rialto, Fontana, San Dimas.
- **Cause:** Human



The Grand Prix was reported at 2:22 pm and began near Grand Prix Drive and Shetland Lane in Northern Fontana in the community of Hunter's Ridge. First arriving firefighters reported a two acre fire burning in old brush burning with a "rapid rate of spread" fanned by a strong southwest wind. The temperatures were hot and the humidities were extremely low. Fire spotting ahead of the main fire was occurring and within one hour of the start of the fire it was already reported to be over 100 acres and moving into 45 year old brush. Veteran firefighters recognized that this fire had "extreme fire behavior" as it threatened communities of Lytle Creek to the north, Devore to the east and thousands of homes in the foothill communities to the south. High tension lines were threatened and miles of distribution lines were destroyed causing huge power outages. Two major highways and a major railway line were closed as the fire swept across them. Even the incident command post was threatened as the Grand Prix and the Old fires merged.

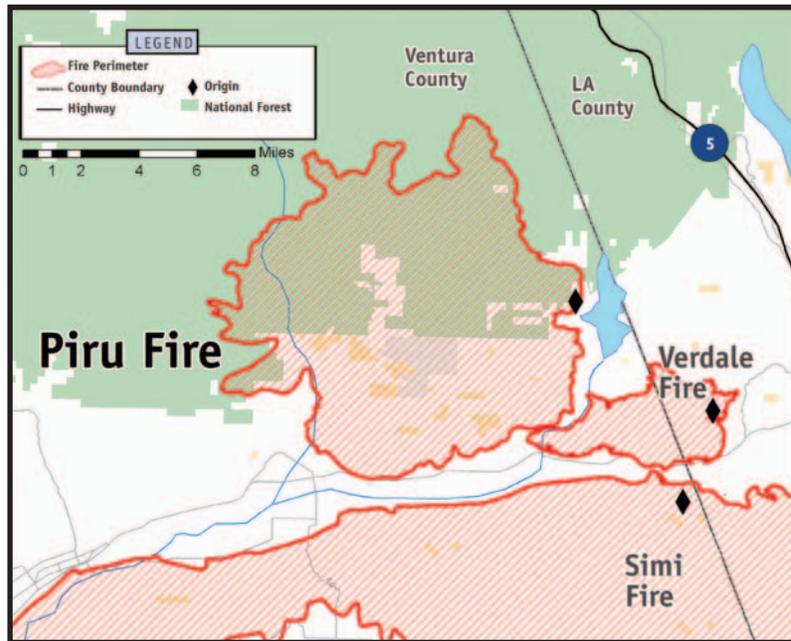
At the start of the Grand Prix Fire, the Unified Commanders requested a Federal Regional Team and selected a strategic alternative through the WFSA process. On October 25, Santa Ana winds pushed the fire further out of control and beyond the scope of the WFSA strategy prompting Chief Officers to transition to a Federal National Team. The Unified Command Team was able to use the Mountain Area Safety Taskforce's (MAST) advanced planning efforts to set critical strategic goals. With the increase in fire activity across the region, the team's perception was that the resource ordering system could not keep up with the large number of resource orders being requested and deployed. Their response was to adjust their strategic objectives to a level they could accomplish with the resources on hand. The Chief of Los Angeles County Fire Department emptied fire stations in order to move fire engines to protect the cities of Claremont and La Verne. The Grand Prix fire's westward push was threatening to spread into the Angeles National Forest. Chief Officers of the U.S. Forest Service and Los Angeles County Fire Department chose to split off Branch 7 along the Angeles/San Bernardino forest boundary and create a separate incident—the Padua Fire. This decision was based on span of control, logistical support to firefighters, and communications. This decision also resulted in a new dedicated ordering point. A new Federal National Team was ordered for the Padua Fire. A significant impact recognized by the Incident Management Teams was the delay of receiving resources by a system that was now 24–48 hours behind actual operations of the incidents.

The team was able to adjust strategies and take advantage of natural fire barriers and older burned areas as the Santa Ana winds abated and marine airflow returned. By October 29, entire branches of the Grand Prix/Padua Fire were contained and firefighting resources reassigned or assisted on the west flank of the Old Fire near Silver Lake.

Piru

Oct. 23–Nov. 4, 2003

- **Total Acres:** 63,991
- **Estimated Suppression Cost:** \$7,700,000
- **Firefighters Assigned at Peak:** 1,512
- **Residences Destroyed:** 1
- **Commercial Destroyed:** 1
- **Other Structures Destroyed:** 6
- **Lives Lost:** 0
- **Communities Evacuated:**
- **Cause:** Under Investigation
- **Fuel Type:** Moderate to heavy brush



Incident commanders chose a strategy to protect values at risk early in the firefight. A decision was made to protect farm and ranch economic values due to the potential high dollar loss to the agricultural community. The

Verdale, Piru and Simi fires were burning in very close proximity to each other. This proximity caused a safety concern as well as a concern for firefighting resources deploying on the wrong fire. On Oct. 25 Incident Commanders for the Verdale, Piru, and Simi fires coordinated and shared resources between the fires. On Oct. 26, the Piru Fire threatened the Hopper Ranch/Condor research site. Site managers had completed fire defense improvements prior to the fire and these improvements proved successful in lessening the impacts of the fire. On Oct. 27, it became clear that the command team would not be able to achieve the strategic objectives of the selected alternative in the WFSA analysis. New objectives were set. Complications occurred between CDF's 24-hour shifts and the U.S Forest Service's 12-hour shifts. The Unified Command was able to capitalize on earlier fuels and vegetation work completed by the Ventura County Fire Department. Unified Command came to the conclusion that the South Ops resource ordering system could not keep up with the large number of resource orders. The team adjusted objectives based on the resources available. The Unified Command was successful in including law enforcement as a branch of their Operations Section.

Early in the Unified Command organization there was some confusion over agency policy as a CDF Incident Command Team was also managing the part of the fire that was on National Forest Land. Close coordination took place between the agencies to insure that agency-specific policies were met. On October 30, a Federal National Team was assigned in Unified Command with the existing CDF team.

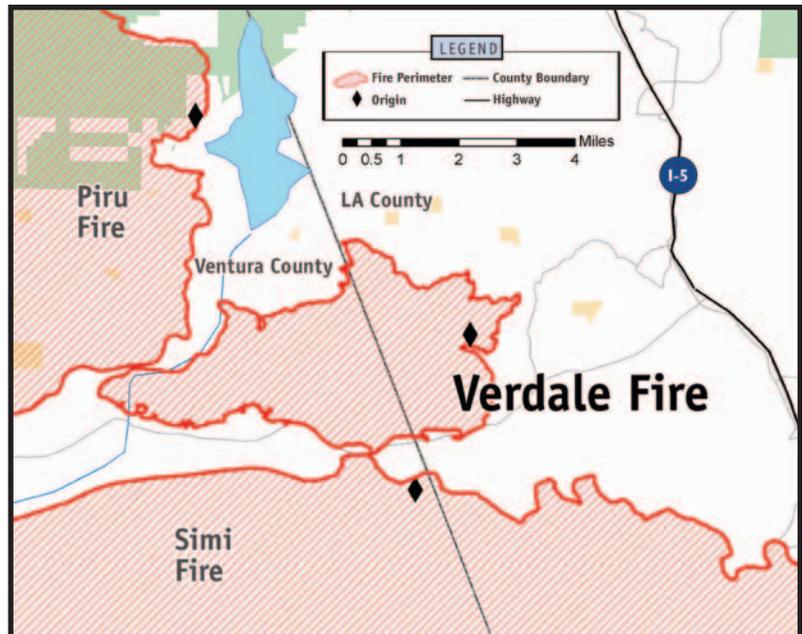
The Piru Fire burned in both the Wildland Urban Interface (WUI) and the Sespe Wilderness area simultaneously. There were not enough resources available to attack the fire in both areas. Priority was placed on the WUI fire until additional resources could be obtained to adequately staff the wilderness area.

Verdale

Oct. 24– Oct. 28, 2003

- Total Acres: 8,650
- Estimated Suppression Cost: \$2,407,000
- Firefighters Assigned at Peak: 883
- Residences Destroyed: 0
- Other Structures Destroyed: 1
- Lives Lost: 0
- Communities Evacuated: Piru
- Cause: Under Investigation
- Fuel Type: Grass and medium brush

The Verdale Fire started in Los Angeles County near the community of Santa Clarita and quickly burned into Ventura County. When the fire spotted across Highway 126, three-quarters of a mile away, the Chief Officers of LA County and Ventura County Fire Departments agreed to create a second incident command, the Simi Fire. This decision allowed for a simplified command structure, reducing the span of control and potential communication problems as the fire spread into Ventura County. By October 25, Incident Commanders effectively operated as an area command to share resources as needed between the Verdale, Piru, and Simi fires. The strategy allowed for an efficient use of available resources on the incidents but caused some confusion at South Ops.



Happy

Oct. 24–Oct. 26, 2003

- Total Acres: 250
- Estimated Suppression Cost: Unknown
- Firefighters Assigned at Peak: 80
- Residences Destroyed: 0
- Lives Lost: 0
- Communities Evacuated: None
- Cause: Under Investigation
- Fuel Type: Grass, light to medium brush

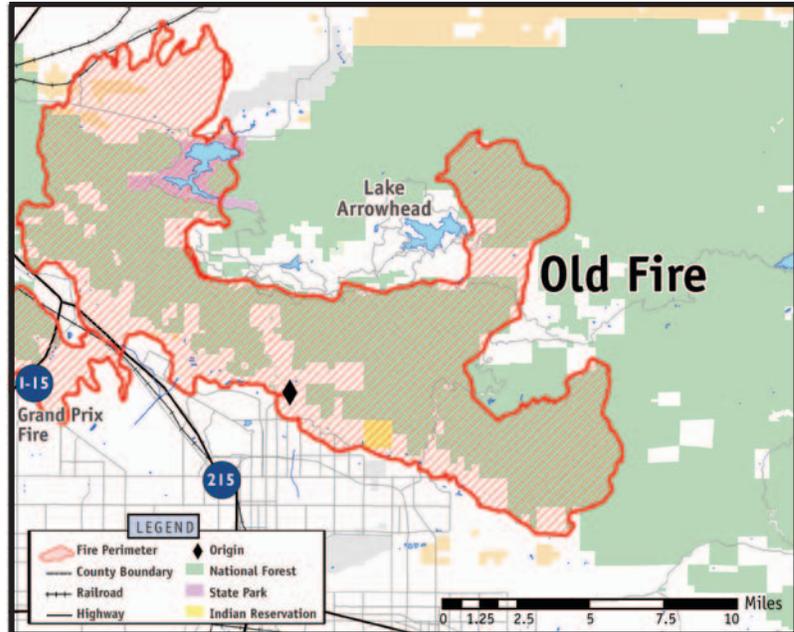
The initial attack incident commander recognized the deteriorating fire situation in the region as the Santa Ana wind event approached. Significant resources were sent to the Happy Fire with a strategy of containing the fire as quickly as possible before the winds arrived. This strategy proved successful as the Happy Fire was effectively stopped at 250 acres within the first burning period.



Old

Oct. 25–Nov. 4, 2003

- Total Acres: 91,281
- Estimated Suppression Cost: \$37,650,00
- Firefighters Assigned at Peak : 4,211
- Residences Destroyed: 940
- Commercial Destroyed: 30
- Lives Lost: 6
- Communities Evacuated: Arrowhead Springs, San Bernardino, Del Rosa, Devore, Crestline, Rimforest, Crest Forest, Rim Forest, Running Springs, Highland, Skyforest, Cedarpines Park, Valley of Enchantment, Twin Peaks, Summit Valley, Lake Arrowhead, Los Flores Ranch, Holcomb Valley, Oak Springs Ranch, Blue Jay, Cedar Glen, Hook Creek, Green Valley Lake, Arrowbear, Devore, Lucerne Valley, Apple Valley, Squint Ranch, Silverwood Lake, Summit Valley, Baldy Mesa, Oak Hills, South Hesperia.
- Cause: Under Investigation
- Fuel Type: Medium to heavy brush and bug killed timber



The Old Fire started at 9:16 am in Waterman Canyon above the City of San Bernardino and rapidly spread downhill threatening Arrowhead Springs Resort and then the community of Del Rosa. Strong gusty Santa Ana winds pushed the fire into the neighborhood west and east of Waterman Canyon (Highway 18). Firefighters were confronted by a dangerously fast moving fire with major spotting. Ignited palm trees fronds acted like torches of fire in the wind igniting numerous spot fires that threatened and burned homes. Two civilians died during the first evening. It was also burning up canyon driven by steep terrain and dry vegetation as the humidities dropped to six percent. This northern spread up the canyon would become a problem later when the Santa Ana winds subsided and the prevailing west winds arrived pushing the fire into the dead, dying and diseased forests of the San Bernardino National Forest and the many communities located there.

From the onset of the fire, unified incident commanders successfully used the Mountain Area Safety Task Force (MAST) planning effort for critical, strategic, and tactical decisions. The MAST effort proved critical to a successful evacuation effort when winds shifted and blew the fire into the mountain communities. 70,000 citizens were evacuated. The MAST project that had cleared dead trees from the evacuation routes proved successful as firefighters used these corridors for a major backfire in an attempt to keep fire out of the mountain communities. In spite of this there were significant numbers of homes destroyed in the Crest Forest, Crestline and Cedar Glen areas. Throughout the fire, local fire departments coordinated with the incident commanders and took action for the immediate protection of life and property within their jurisdictions. At the height of the fire over 4,000 firefighters were assigned to the fire and were successful in protecting over \$7.5 billion in residential and commercial infrastructure.

The major evacuation occurred overnight with no electricity to power lights or to power radios and TV's to help spread the word. In spite of these challenges, the evacuation went well, primarily due to preplanning efforts. The use of Therma-Gel and Fire Out Ice, two fire resistant gels, was highly successful in protecting structures in Crestline and Rim Forest.

Chief Officers decided to order an additional Federal Team to prepare contingency lines between the Old Fire and the Big Bear, Oak Glen, Forest Falls and Angelus Oaks communities. By October 30, an Area Command was established to coordinate efforts between the Grand Prix Fire, the Old Fire and the contingency teams. Incident objectives were adjusted to take into consideration resource values at risk.