

UPDATED



104 Years of Wildfire History



Near Chino Hills State Park





HILLS FOR EVERYONE

Hills For Everyone (HFE) was formed in 1977 to protect, preserve, and restore the environmental resources and natural environs of the Puente-Chino Hills. These hills lie at the juncture of Southern California's four most populous counties: Orange, Los Angeles, Riverside, and San Bernardino. Our first goal was the creation of Chino Hills State Park which now covers 14,100 acres near the Cities of Anaheim, Brea, Yorba Linda, Corona, and Chino Hills.



While advocating for acquisition funding at the state level and receiving bipartisan support, volunteers also became involved in planning processes and land use decisions of local governments. Even today, HFE opposes projects that damage the still evolving Park and supports decisions that protect it.

With our increased understanding of the principles of conservation biology and the need to save large habitat to preserve the region's rich biodiversity, HFE began working with open space advocates on the western side of the hills in Whittier who had already saved 4,000 acres. Our goal now is to link the remaining critical parcels of undeveloped land across the Puente-Chino Hills Wildlife Corridor to provide a backdrop and backbone of open space for this highly urbanized region.

The Original Study

Our previous research is included in the document "A 100 Year Fire History Near Chino Hills State Park" and can be downloaded for free from HFE's website at:

<https://www.hillsforeveryone.org/news-and-publications/research-reports/wildfire-studies/fire-study/>.

The Updated Study

This document is the update to the 2012 report, called "104 Years of Wildfire History Near Chino Hills State Park" and can be downloaded for free from HFE's website at: <https://www.hillsforeveryone.org/news-and-publications/research-reports/wildfire-studies/updated-fire-study/>. Digital datasets viewable in Google Earth are also available for download on that page.

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Data Sharing

With an appropriate datasharing agreement in place HFE will share, at its discretion, its fire data from this study in GIS format with non-profits, local jurisdictions, and agencies. Please contact us to learn more or request the data from this study at: FireStudy@HillsForEveryone.org.

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ABSTRACT

Given the recent upsurge in large damaging wildfires in California, six years after completing its first Wildfire History Report for Chino Hills State Park, the regional conservation non-profit Hills For Everyone updated its research to include fires between 2012 and 2018. The Study now includes 104 years of wildfire history. Though fires are a natural part of the ecosystem, there is nothing natural about the size and frequency of the fires destroying our wildlands year after year. Data, mainly from fire agencies, the California Department of Parks and Recreation, and newspapers, provided details on fire perimeters, points of origin, and fire causes. This paper updates tables, statistics, and maps, and reviews the recommendations from the 2012 Study to determine if progress has been made at reducing fire ignitions. A few additional recommendations and future areas to study are included in this report as well. We will continue to work with fire and natural resource agencies to bring the necessary resources to this area.

INTRODUCTION

In 2012, Hills For Everyone (HFE) completed a near 100 year fire study of wildland fires that burned in and around Chino Hills State Park (CHSP). This analysis was undertaken to understand the fire causes, locations, and how these fires were impacting the State Park and nearby residences. Initially, the report spanned 1914-2011 with enough data to display 103 fires. Recently, HFE expanded the research to include fires from 2012-2018. These seven years added 48 more wildland fires. It appears that most of the new fires were small in size, extinguished quickly, and occurred on “normal” temperature, humidity, and wind days. A few fires in the update did not meet this norm and ravaged both the wildlands and homes in the region. The continued goal is to reduce fire ignitions ultimately saving lives, homes, and natural resources by understanding why and where wildland fires start.

CHINO HILLS STATE PARK — BACKGROUND

The State Park sits at the juncture of four of Southern California’s most urbanized counties: Los Angeles, Orange, Riverside, and San Bernardino. The Park has been assembled through more than 30 different acquisitions to grow to more than 14,100 acres. The Park’s first acquisition was in 1981. It continued to expand. That said, no new acquisitions have occurred since the previous report’s release in 2012.

HFE a regional non-profit conservation organization, founded CHSP in the early 1980s and has been working over the last 40 years to connect and protect this anchor parcel with conserved lands across the Puente-Chino Hills Wildlife

Corridor. Due to the work of HFE and State Parks, along with many other non-profits, agencies, and jurisdictions, a permanent connection at Coal Canyon was secured in 2001. Coal Canyon links the Trabuco District of the Cleveland National Forest in the Santa Ana Mountains with CHSP and the greater Puente-Chino Hills ecosystem. This linkage provides a critical connection that allows wildlife to move freely between the Santa Ana Mountains and the Puente-Chino Hills. It also provides a source to repopulate natural areas should a catastrophic event, like a fire or disease outbreak, occur.

CHSP was established to protect its many rare natural resources. Its gently rolling hills are covered in grasslands and dotted with oak and walnut trees. In the steep canyons of the interior, sycamore-lined streams and walnut woodlands abound. The normal fire frequency for coastal sage scrub and chaparral is a fire every 30 -150 years. This gives the plants time to regenerate from a fire. Based on our original research, 103 fires over 97 years means that fires were burning portions of the State Park every 11 months.

Fires that occur too frequently inhibit the plants ability to recover in between the fires. When habitats burn too frequently, the plants don’t have enough stored energy to recover and non-native grasses tend to take over. This is called type conversion, when one natural habitat type converts to a non-native habitat. Non-native grasses dry out earlier in the season, ignite fire faster, and spread fire more quickly.



Melanie Schlotterbeck, CHSP (2/19)



THE ORIGINAL STUDY

HFE originally launched a study to try to understand why so many fires burned in or adjacent to the State Park and to see if any actions could be taken to reduce the number of fires, resulting in the protection of both houses and natural resources.

When we originally tried to understand what was going on with fires by reading reports and reviewing maps from various fire agencies, the data from each agency stopped at its jurisdictional boundary. No one was looking beyond those boundaries for a broader view of the problem. That realization propelled us to do this homework.



Bob Kanne, Canyon 1 Fire (9/17)

HFE had three main objectives in carrying out this study:

1. Gather the data available to document the fire perimeters, points of origin, causes, and weather conditions for each fire that burned in, adjacent to, or near CHSP;
2. Analyze the results of the research and determine any fire-prone areas that needed particular attention; and,
3. Provide general recommendations for residents and agencies to reduce the number of fires and impacts associated with wildland fires, and concurrently protect homes, people, and parkland from unnaturally frequent fires.

There are important terms used throughout this report and their meaning is useful to understand:

Cause: The confirmed or unconfirmed source of the wildland fire's ignition.

Fire Perimeter: The farthest geographical extent, also known as the outer boundary, of a fire.
Note: Not all areas within the perimeter necessarily burned.

Fire Frequency: The number of times a specific geographic region has burned. The darker the color the more frequent the area has burned.

Natural Fire Regime: The general classification of the role fire would play in the natural environment in the absence of modern human intervention.

Point of Origin (Fire Ignition): The approximate or exact location where the wildland fire ignited within the Study Area.

Study Area: CHSP and environs.

Wildland-Urban Interface (WUI): The boundary between developed regions and the natural wildland areas.

This research resulted in the digital history of 103 documented fires that burned between 1914 and 2011. There was data on 71 fire perimeters and 70 fire ignitions, totaling 103 individual fires. Only two fires were natural (caused by lightning), the remainder were human caused. The high level of fire frequency will eventually change the habitat types in CHSP, if it hasn't already.



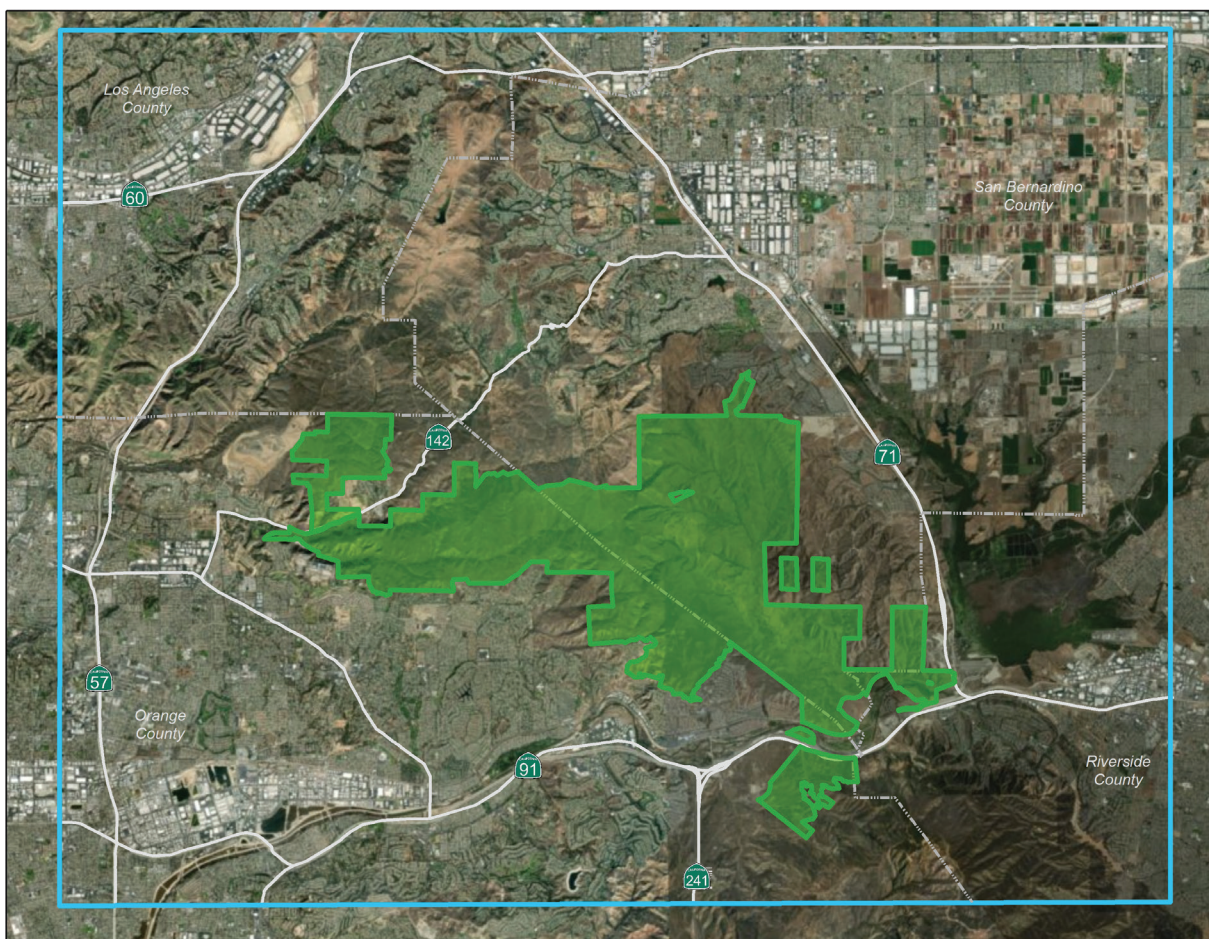


Figure 1. The Study Area, shown in blue, includes Chino Hills State Park (shown in green) and surrounding hillsides.

STUDY AREA

The Study Area includes lands generally bounded by the 57 Freeway on the west, the 60 Freeway to the north, the 71 Freeway to the east, and the 91 Freeway to the south. The region studied includes all of CHSP, but due to the proximity of other protected natural lands, portions of the northern section of the Cleveland National Forest's Trabuco District, the northern portion of the Irvine Ranch Lands (OC Parks), and the Prado Wetlands were also reviewed. Numerous private ownerships in Orange, Riverside, San Bernardino, and Los Angeles Counties that abut these protected lands were also included due to proximity.

The most recent analysis excluded fires that started in very urban areas (generally more than one-half mile from the Wildland-Urban Interface (WUI)). That said, if a fire started in any of the open space lands—it was included, as was any fire along the main transportation corridors (91, 71, and 57 Freeways and State Route 142) due to their proximity to natural lands.

Information Sources and GIS Analysis

Similar to the 2012 Study, HFE secured the shapefiles (digital data sets) of fire perimeters and points of origin from the California Department of Forestry and Fire Protection (CalFire), the Orange County Fire Authority (OCFA), and the Cities of Brea and Anaheim. Due to lack of detail, we were unable to use the information provided by Chino Valley Independent Fire District and Corona Fire Department.

Where appropriate, newspaper articles/maps, State Park Wildland Fire Reports, and personal accounts were used to digitally create a fire perimeter and/or point of origin. HFE used the ArcMap 10.1, a geographic information system (GIS) software program, to assimilate the fire data. To enable wide distribution, the files were exported from ArcMap for use in Google Earth. This program is available free to the public, unlike ArcMap.

Through this research, HFE was able to piece together a digital dataset that outlines where known (and documented) fires burned, and in some cases why the fires started. Similar to the 2012 Study, not all fires that burned in the Study Area were formally documented or no details about the perimeter or point of origin were complete enough to include in this report. Consequently, there are actually more fires that could not be included, due to lack of adequate data. The emergence of public safety apps allowed us to compare “on the ground” reports and look for additional data elsewhere (such as PulsePoint), but these were not considered reliable sources to add a fire without confirmation from a fire agency.

Fire Regime

HFE originally analyzed the fire regime (both natural and human caused) of all documented fires that burned in, adjacent to, or had the potential to burn into CHSP from 1914 – 2011. It seems in that 97 year history only two fires occurred naturally due to lightning strikes. This means the natural fire regime was one fire every 50 years. The remaining fires (101) were caused by humans, either intentionally or unintentionally.

The 2012 - 2018 data only included human caused ignitions. In other words, all 48 new fires were started intentionally or unintentionally by humans, as no lightning strikes were recorded. This equates to a fire regime that was reduced from every 11 months to every 8 months. Note, not all of the State Park burned in these fires, sometimes it had the potential to burn. Our habitat lands naturally burn every 30-150 years. This unnatural fire frequency does not provide plants with the ability to regenerate post-fire as successfully as they would if they actually had the proper time to recover between fires. Thus the significant state investment in protecting these natural resources is at risk.



Melanie Schlotterbeck, Coal Fire (09/14)



Anaheim Fire Department, Canyon 2 Fire (10/17)



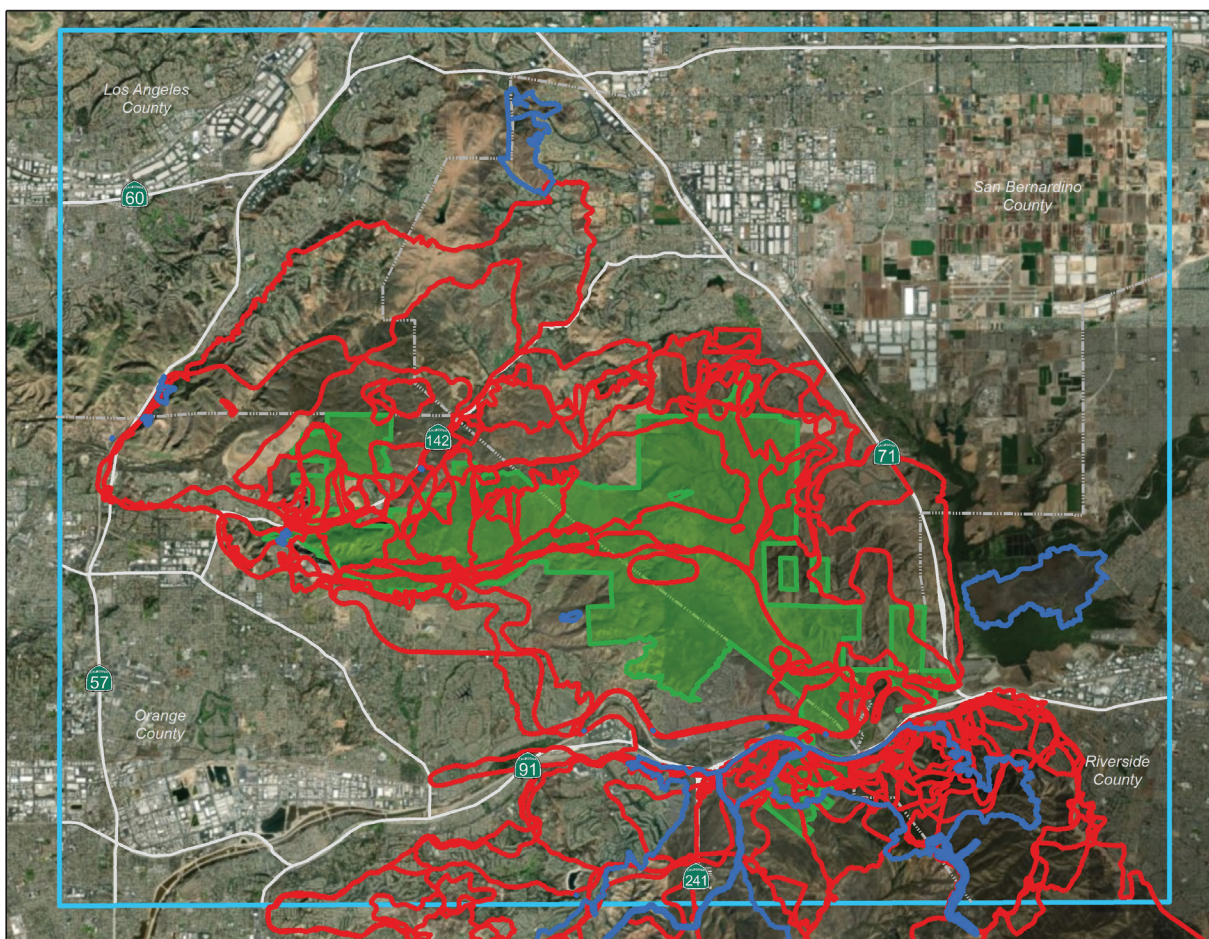


Figure 2. Fire perimeters from the original report are in red, while the new perimeters are blue. There are now a total of 90 fire perimeters.

Fire Perimeters

In the first report, HFE was able to assemble 71 separate fire perimeters with 37 of those fires having known points of origin. In the update, there are 19 new fire perimeters with seven known points of origin. Thus, there are now 90 documented fire perimeters.

It is important to note that with increased pressure from residential development and road creation or expansions that have increased access to the undeveloped hills and the Park—more fires have started. It appears that the added housing developments at the WUI surrounding the Park have significantly increased the number of fires burning in or near the Park.

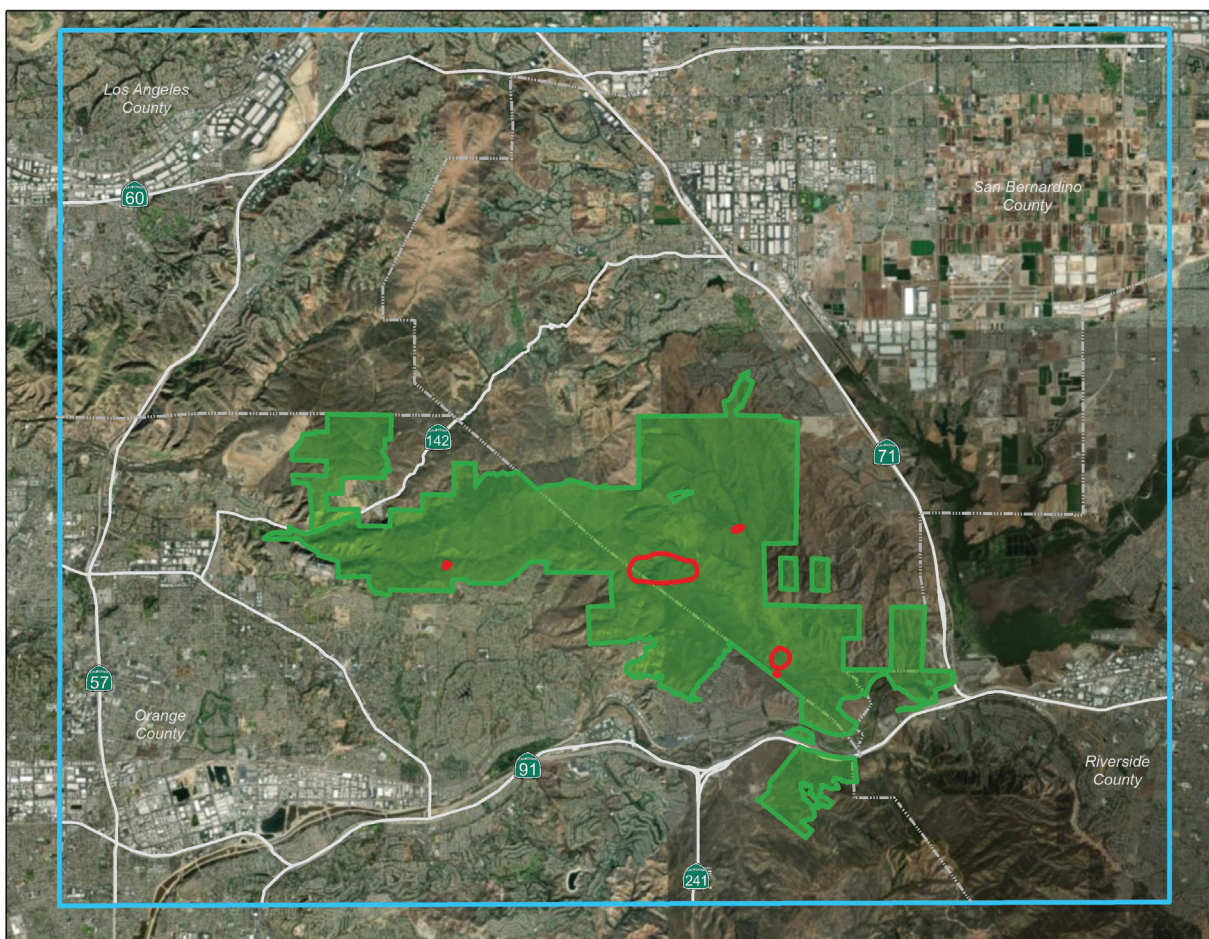


Figure 3. Five fires have started in Chino Hills State Park, but none have escaped the park's boundaries.

No fire that ever started in the State Park has escaped the Park boundaries. There are five fires that have ignited within its boundaries, including:

- 1989 - Aliso Canyon (43.7 acres) - Cause: unknown.
- 1989 - South Ridge (5 acres) - Cause: a mower doing brush clearance.
- 1992 - San Juan Hill (248 acres) - Cause: plane crash.
- 2006 - Brush Canyon (1.4 acres) - Cause: lightning.
- 2006 - Blue Gum (3.2 acres) - Cause: an illegal campfire.

On the other hand, many of the fires that start outside the State Park boundary do burn the State Park.

Fire Points of Origin

HFE documented 70 separate fire points of origin in the original Study, with 37 of the fires having known perimeters. In the update, there are 36 new fire ignitions with seven known fire perimeters. There are now 106 documented fire ignitions.

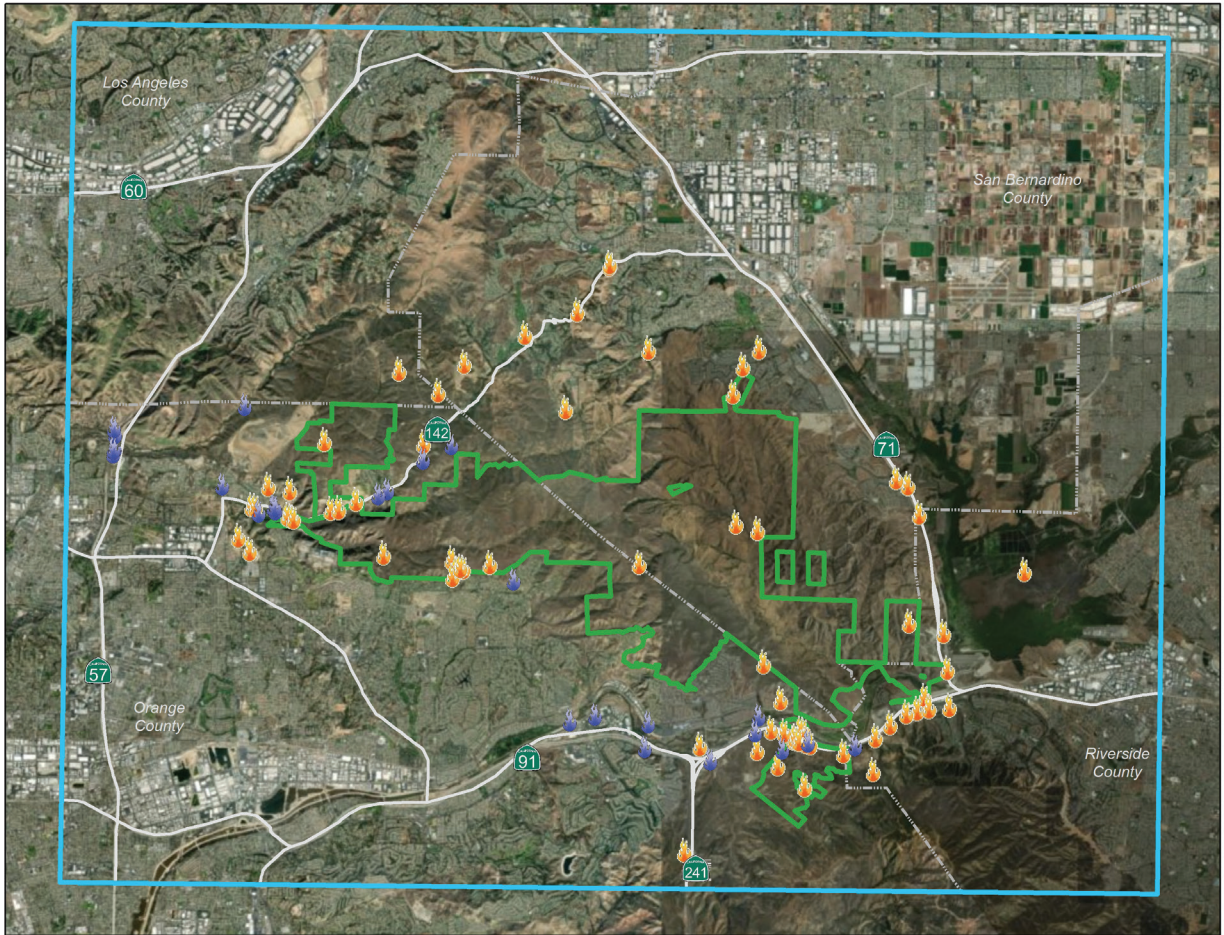


Figure 4. Fire ignitions from the original report are shown as orange flames, while the new ignitions are blue. There are a total of 106 fire ignitions.

With additional detail in this update, we've added five types of fire causes: road flare, cigarette, illegal campfire, prescribed burn, and accident.

The data indicate fires started due to a variety of causes. Details about fire ignitions are broken down as follows:

Table 1. Fire causes, quantities, and total acreage burned (using both fire perimeter and point of origin data).

Cause	Number of Fires (1914-2011)	Number of Fires (2012-2018)	Total Number of Fires (1914-2018)	Total Acreage Burned
Unknown	61	25	86	152,054 [*]
Arson	9	6	15	9,313 [*]
Automobiles	7	5	12	30,340 [*]
Fireworks	7	2	9	10,442 [*]
Power lines	6	0	6	22,225 [*]
Prescribed	2	5	7	14,978
Plane Crash	5	0	5	540 [*]
Sleeper Fire ^{**}	2	0	2	14,150
Machinery	4	0	4	59 [*]
Lightning	2	0	2	733 [*]
Road Flare ^{***}	0	2	2	11,877
Cigarette	0	1	1	2
Illegal Campfire	0	1	1	1,049
Accidental	0	1	1	1
Total:	103	48	151	253,613[*]

* indicates some acreages are unknown and therefore the number is actually higher than shown.

** indicates a re-ignited prescribed burn.

*** Canyon 1 Fire started with a road flare, and the fire went underground until a high wind day, which reignited it. The flare up was named the Canyon 2 Fire.



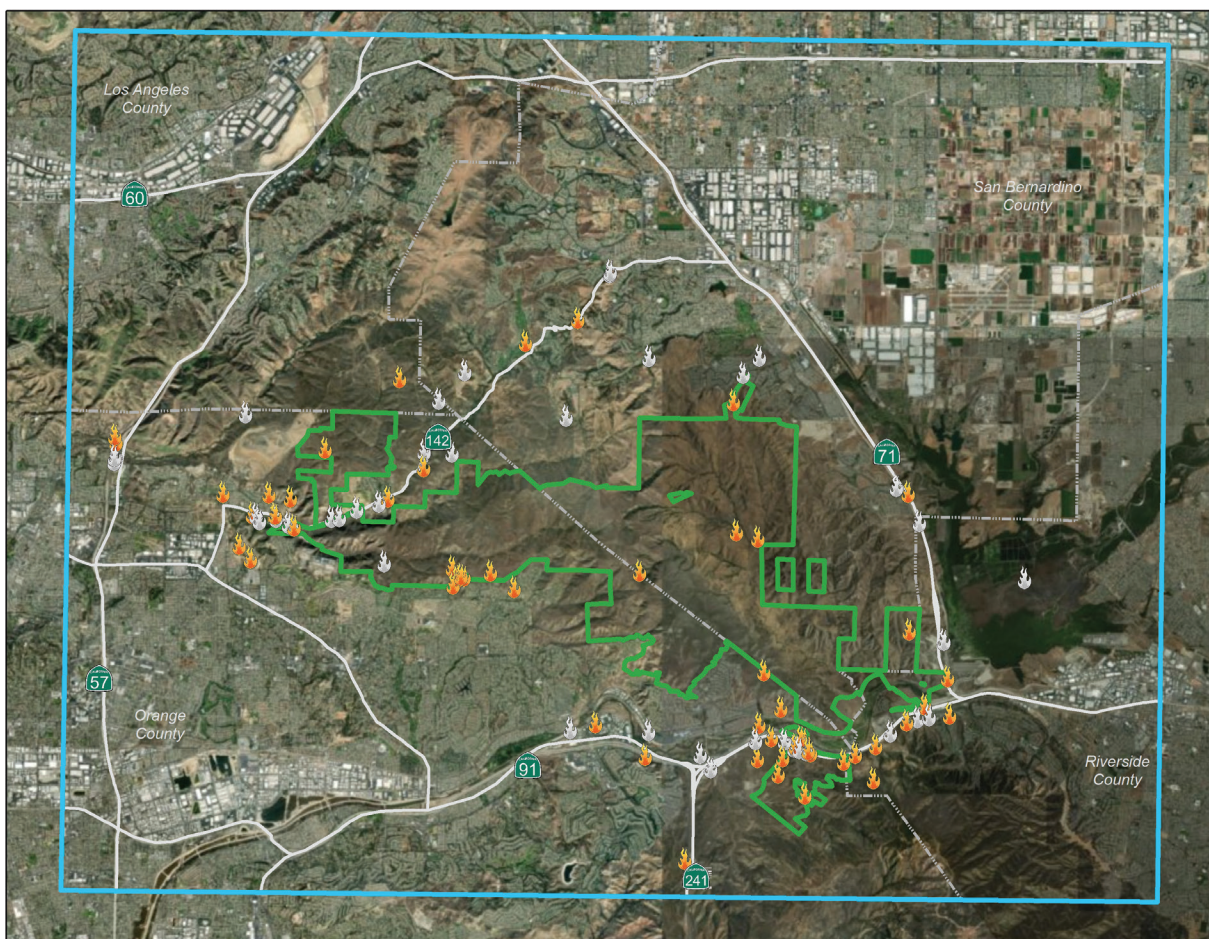


Figure 5. When the cause of the fire ignition is known, the flame is orange. When it is unknown the flame is gray.

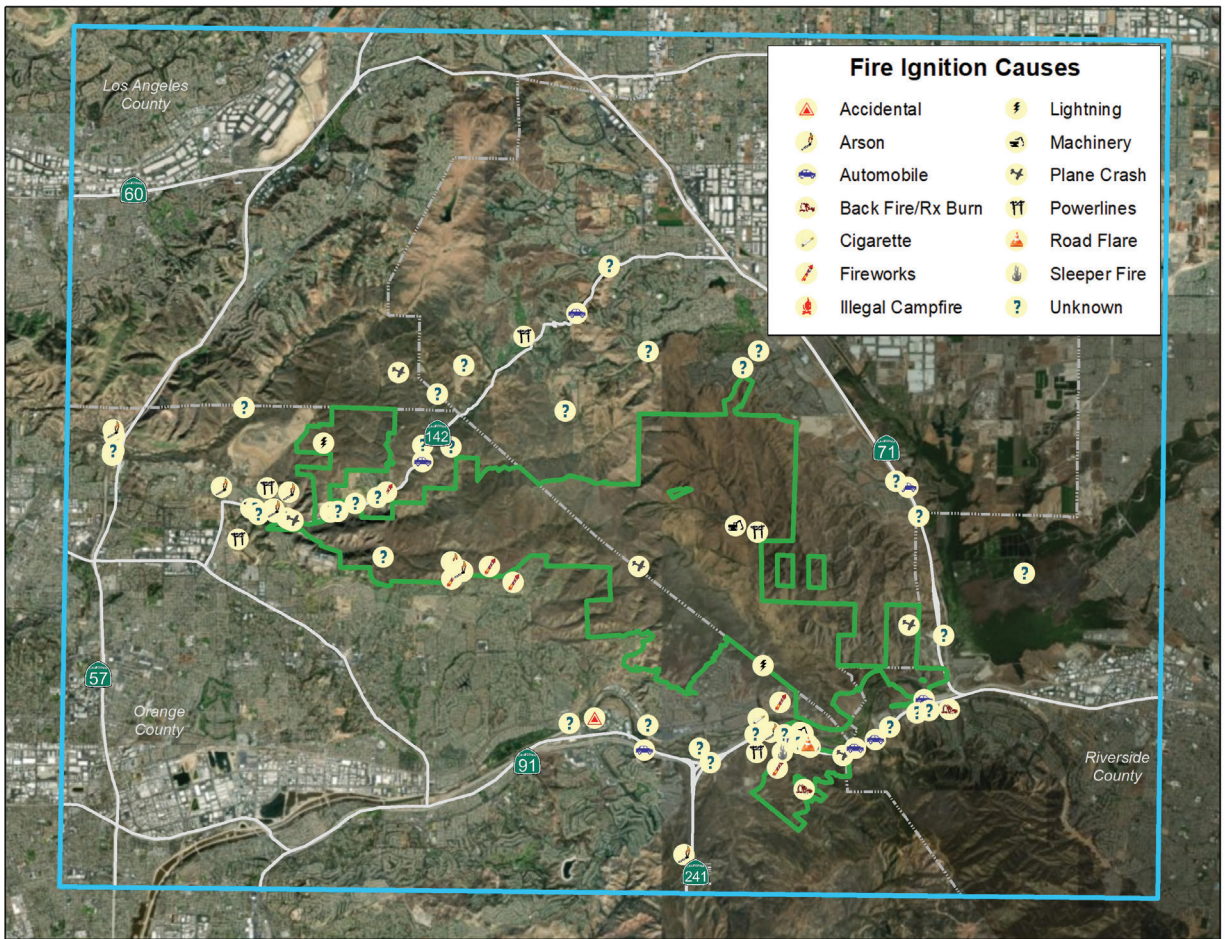


Figure 6. Fire ignitions by type, with the most ignitions from unknown sources.

As we found during the original study, obtaining a known or confirmed cause for a wildland fire was difficult. Sixty-one fires had no information regarding the fire's source and in the update there were 25. Originally, the top three most identifiable causes of wildland fires in the Study Area were: arson, automobiles, and fireworks. For the update, the categories remain the same.

Fire Frequency

By overlapping all the fire perimeters, HFE was able to determine the fire frequency in the Study Area. The lightest color (light yellow) on the map indicates that area only burned once. Whereas the darkest color on the map, black, indicates the area burned eight or more times.

When one looks at the fire frequency and the points of origin there are obvious locations (“hotspots”) that have burned repeatedly. The original data showed three hotspots: the 91 Freeway Corridor (Santa Ana Canyon) between Anaheim and Corona, Carbon Canyon in Brea, and the Rimcrest entrance to Chino Hills State Park in Yorba Linda. One third of all fires start along the 91 Freeway Corridor. With this update, the 57 Freeway may be becoming a hotspot as well with 11 fires in six years.

Later in this report, HFE will review the previous recommendations and provide an update and add new general recommendations for potential proactive steps to reduce the fire frequency at these known hotspots.

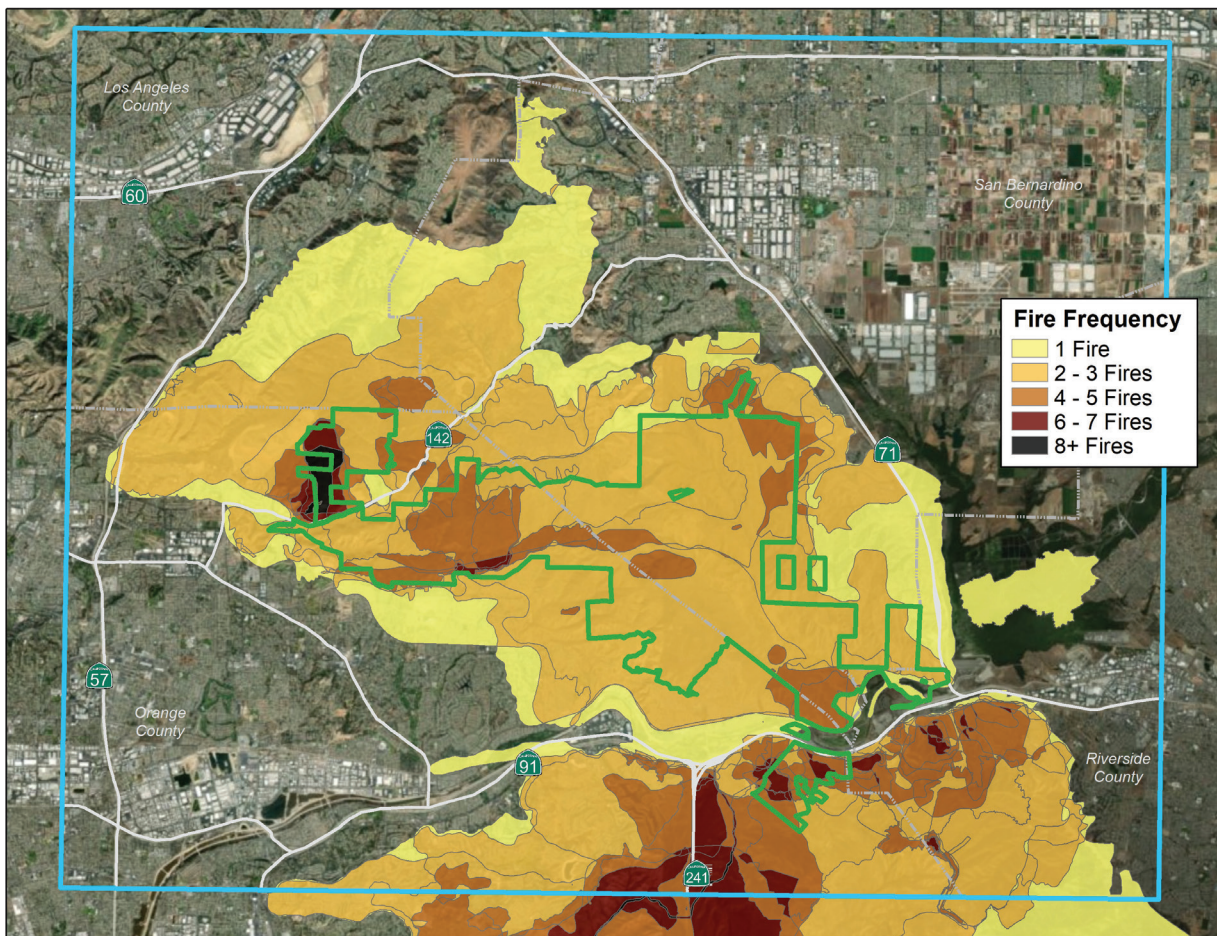


Figure 7. The fire frequency shows how often areas are burning. The darker the color means more fires.

Fires and Weather Patterns

The prevailing wind for this region is a westerly onshore flow and the majority of the fires occur during those normal conditions. The Santa Ana Winds (which come from the east/northeast) are the exception and as these winds tend to be hot and dry. Fires that start under these extreme conditions have a tendency to get out of control. The relative humidity and temperature play a significant role in reducing the fuel moisture in the vegetation, especially the thin dead fuel (such as annual grasses and mustard). Santa Ana Wind events are known for helping spread the fires and therefore require expanded and rapid fire protection presence.

Briefly, the foehn winds, known locally as Santa Ana Winds, are caused when high pressure systems sit inland and a low pressure system sits off the coast. In our area, the foehn/Santa Ana Winds are generated when the high pressure system is positioned over the high desert (Mojave and Great Basin). The winds blow from the southern side of the high pressure system toward the low pressure system over the Pacific Ocean. Typically they are hot and dry with a very low relative humidity (10-20%).¹ This is due to the compression of the wind after going up and over the mountains. Relative humidity indicates the ratio between the moisture in the air and the amount of moisture needed to saturate the air—it is a function of both moisture and temperature. Moisture in vegetation can be rapidly depleted in Santa Ana Wind conditions. Generally the finer the vegetation (grass) the quicker it dries out compared to a mature oak tree with a thick bark and a thick trunk.

Also researched were the weather patterns from the fires included in the Study. Weather Underground and The Weather Channel websites were used to collect the data, using Chino Hills as the location. HFE was unable to obtain weather data before 1977.

¹ National Oceanic and Atmospheric Administration. "Santa Ana Conditions – Southern California." Retrieved 20 June 2012 from the National Oceanic and Atmospheric Administration website: http://www.noaa.gov/2008/santa_ana.php.



Table 2. Weather features during fire events.

Weather Features on Fire Days	Fires (1914-2011)		Fires (2012-2018)	All Fires (1914-2018)
Average Temperature was:	90°F (Data was available for 58 fires)		84°F (14 fires)	87°F (72 fires)
Average Relative Humidity was:	51% (Data was available for 34 fires)		79% (14 fires)	65% (48 fires)
Average Wind Speed was:	6 mph (Data was available for 78 fires)		10 mph (14 fires)	8 mph (92 fires)
Average Wind Gusts were:	28 mph (Data was available for 26 fires)		14 mph (12 fires)	21 mph (38 fires)
Wind Direction was: (The direction the wind originates from) (Data was available for 78 fires)	North (N, NE, NW)	11 fires	2 fires	13 fires
	East (E, ENE, ESE)	6 fires	0 fires	6 fires
	South (S, SE, SW)	16 fires	7 fires	23 fires
	West (W, WNW, WSW)	45 fires	5 fires	50 fires

Fires and Seasonal Patterns

It is not surprising that in the hotter, drier months between May and November there are more fires than in the moister winter months between December and April. There is a clear correlation between fire frequency and the summer months as seen in the table below. The majority of fires occur in July. However, October and November have the largest average acres burned. This is likely due to the fact that this is the end of the dry season and these months are prone to Santa Ana Wind conditions.

Table 3. Fires by month, acreage burned, and average acreage burned.

Month	Known Fires (1914-2011)	Known Fires (2012-2018)	All Fires (1914-2018)	Total Acreage Burned	Average Acreage Burned
Unknown	10	5	15	18,911*	1,382** (14 fires)
January	2	1	3	0*	175** (1 fire)
February	2	0	2	12,740	6,370 (2 fires)
March	3	0	3	1,618*	814** (1 fires)
April	3	5	8	1,950*	282* (7 fires)
May	7	4	11	6*	23** (5 fires)
June	10	1	11	8,649*	814 (10 fires)
July	22	11	33	18,362*	876** (26 fires)
August	10	5	15	2,673*	179** (13 fires)
September	11	8	19	7,238*	547** (13 fires)
October	11	8	19	94,149*	6,311** (18 fires)
November	10	0	10	87,316*	9,726 (8 fires)
December	2	0	2	4*	0** (1 fire)
Total:	103	48	151	266,586*	2,185** (122 fires)

* indicates some acreages are unknown and therefore the number is actually higher than shown.

** indicates acreages were averaged only where known fire acreages existed; if a fire acreage was unknown the fire was left out of the average.



RECOMMENDATIONS

The 2012 report indicated that there were three “hotspots” in the Study Area that show a propensity to burn: Santa Ana Canyon, Carbon Canyon, and Rimcrest. With that in mind HFE developed several suggestions for possible adoption by transportation and fire agencies, State Parks, cities, and homeowners. This section provides a snapshot of what activities have occurred since the original list of recommendations was established and what remains to be done. It is important to note that HFE made more than two dozen presentations. We remain willing to help develop the political will and partner on implementing these recommendations.

General Recommendations*	Action**	Status (2019)
Enforcement of fire rules and regulations is essential if fires in this region are to be reduced. Develop an effective and funded mechanism for fining violators to improve safety.	While fire agencies have developed brochures for fire prevention, to our knowledge the most effective education is a knock on the door.	Remains a recommendation.
OCFA and citizens of Yorba Linda should organize and work together to increase fire safety as the neighboring Carbon Canyon Fire Safe Council has done.	Residents in Yorba Linda will form a Fire Safe Council due to a settlement agreement. It will be partially funded by the development's association dues. OCFA has not established one yet.	In Progress.
Communities around the hills should create volunteer FireWatch programs that patrol streets on high wind days, like the Santiago Canyon area residents have implemented.	Irvine Ranch Conservancy FireWatch programs were initiated. OC Parks hired the Conservancy to cover Carbon Canyon Regional Park. The City of Brea is using CERT members for the canyon areas.	Implemented in some locations.
Individual residents should take personal responsibility to improve the fire safety of their own homes.	Olinda Village in Brea's Carbon Canyon is now a FireWise Community. Brea's CERT program has implemented a special canyon program in case Olinda Village is cut off from emergency services.	Implemented in some locations. Remains a recommendation.
Jurisdictions should require the highest standard and state-of-the-art construction for fire prevention (e.g., installing passive closure attic vents, which close without human intervention).	The Fire Code was updated in 2016, but it doesn't account for lessons learned 2017 and 2018.	Retrofitting for older homes is still needed in most locations in the Study Area.

* HFE has done dozens of presentations to agencies, cities, fire departments, and resident groups.

** HFE is not claiming to have implemented these actions. We are simply reporting the known activities and status.



General Recommendations*	Action**	Status (2019)
When planning for future development at the WUI, developers and lead agencies should involve fire agencies at the earliest planning stages.	In some instances, an ingress location approved by a fire agency was later moved, without concurrence from the agency. In other instances, fire agencies are consulted very early in the process.	Varies by location. Remains a recommendation.

Santa Ana Canyon Recommendations*	Action**	Status (2019)
Harden the edges of the 91 Freeway that abut natural lands using K-rails or similar structures.	There remain more than two miles of roadway touching open space that need to be hardened.	Work is underway at the state level to bring attention to this.
Incorporate and enforce an appropriately frequent maintenance program for the power lines owned or operated by Edison and any other utility providers.	Edison now has a Public Safety Power Shutoff program. Electric lines are turned off during potentially dangerous weather conditions. Edison staff is visually inspecting the wires by helicopter, wires are being insulated, additional staff have been hired for weather forecasting, and wood poles in high fire areas will be replaced with a composite material.	Restrictions have been implemented on red flag days. Remains a recommendation for private utilities.
The steep terrain and the wind tunnel effect of this east-west trending canyon heighten the threat of fire in this location. It seems prudent to add a new fire station at either Green River or Gypsum Canyon to improve response time to Santa Ana Canyon fires especially given that the 91 Freeway is often congested which reduces response time.	No known actions have been taken.	Remains a recommendation.
Include Caltrans-type flashing signage on high fire hazard days alerting commuters to be cautious and report suspicious behavior.	Some cities install signage on high wind days with the slogan "See Something, Say Something." Residents are posting bad behavior on social media.	Varies by location.

* HFE has done dozens of presentations to agencies, cities, fire departments, and resident groups.

** HFE is not claiming to have implemented these actions. We are simply reporting the known activities and status.

Santa Ana Canyon Recommendations*	Action**	Status (2019)
Improve safety by enforcing violations caused by agencies, contractors, and businesses that work along the Santa Ana Canyon. For example, agencies should require spotters and water trucks when working in or next to natural lands.	No known actions have been taken.	Remains a recommendation.
Jurisdictions should require the highest standard and state-of-the-art construction for fire prevention (e.g., installing attic vents with finer screens).	No known new developments will occur in the Santa Ana Canyon. The focus should be on the ignitions adjacent to the highway. Retrofitting homes near the freeway should also occur.	Remains a recommendation.
When planning for future development at the WUI, developers and lead agencies should involve fire agencies at the earliest planning stages.	No known new developments will occur in the Santa Ana Canyon.	Remains a recommendation.

Carbon Canyon Recommendations*	Action**	Status (2019)
Caltrans should continue to improve consistency on fuel clearance in a more timely fashion along Carbon Canyon Road (Highway 142). Spraying of the plants in the Caltrans right-of-way should occur early in the growing season, when the plants are small making handcrew removal easier and more economical.	No known actions have been taken.	Remains a recommendation.
Consider reducing the participation for fire agency mutual aid for cities with a WUI and a history of fires. For example, the fire agencies serving Brea, Yorba Linda, and Chino Hills should be “at the bottom of the list” for sending mutual aid to other areas on high fire hazard days since they may have their own fire to respond to. Requests for mutual aid should first be made to more urbanized communities with no WUIs.	No known actions have been taken.	Remains a recommendation.
Continue to increase fire agency presence and patrols during high wind/high heat/low humidity days.	The Brea CERT Team has volunteers to serve as FireWatch members.	Partially Implemented.

* HFE has done dozens of presentations to agencies, cities, fire departments, and resident groups.

** HFE is not claiming to have implemented these actions. We are simply reporting the known activities and status.



Rimcrest Recommendations*	Action**	Status (2019)
Include a door-to-door homeowner education program before fire season begins each year.	Outside of the existing Yorba Linda CERT and residents' planned Fire Safe Council, the City and Orange County Fire Authority have not implemented homeowner education programs.	Remains a recommendation.
Incorporate proactive steps by OCFA and the City of Yorba Linda for retrofitting homes with hardening techniques e.g., boxed eaves, automatic attic vent closures, roofs cleared of leaf debris, no ladder fuels near the house, etc.	No known actions have been taken.	Remains a recommendation.
Remove non-native highly flammable vegetation (such as palm trees and pampas grass).	No known actions have been taken.	Remains a recommendation.
Give fire risk the highest consideration in approving housing projects on the WUI.	The Yorba Linda General Plan was updated in 2016, with no new measures for high fire zones put in place to restrict development or make them safer. OCFA considers new developments an opportunity to experiment with new techniques.	Remains a recommendation.
Continue fire agency presence and patrols during high wind/high heat/low humidity days.	No known actions have been taken.	Remains a recommendation.
Require new developments to use native, fire resistant landscaping to reduce ignitions at the WUI and incorporate defensible space within the development.	The General Plan was updated in 2016 and no new measures regarding landscaping or defensible space were added.	Remains a recommendation.

* HFE has done dozens of presentations to agencies, cities, fire departments, and resident groups.

** HFE is not claiming to have implemented these actions. We are simply reporting the known activities and status.



ADDITIONAL RECOMMENDATIONS

With some progress being made on the 2012 recommendations, additional ideas have been generated over the last few years. These include:

General Recommendations

- Consider the geography of residential units in the application of fire-protective codes when additional home remodeling projects are done. For example, when residents in a very high or high fire hazard severity zone upgrade their windows, they shouldn't be allowed to use vinyl windows which can easily melt in a fire.
- Ban use of flame flares along roadways or in very high or high fire hazard severity zones. Converting the flares to battery operated ones could have prevented the Canyon 1 and Canyon 2 Fires.
- OCFA should be proactive about starting a Fire Safe Council that covers all of Yorba Linda.
- Fire agencies and jurisdictions should aggressively pursue grants to retrofit older homes at the WUI.
- Fire agencies should support efforts by State Parks to improve the WUI with fire-resistant native vegetation.
- Provide additional information, outreach, and education about the Edison Public Safety Power Shutoff program to ensure residents are able to effectively evacuate with the power off.
- Include information, examples, and demonstrate how to make your home fire-safe during safety related events like the National Night Out.
- Require mitigation and repair, when natural resources burn due to incompetence or negligence, of an agency.



CONCLUSION

This update shows that CHSP and environs have endured significantly more fires, 151 to be exact, than would have naturally occurred by lightning strikes (2). Instead of a fire burning every 30-150 years in the natural fire regime, humans have increased the ratio essentially more than a fire a year. HFE recognizes that a sample size of two natural fires is not enough to draw firm conclusions. However, our local examples of natural fires indicate fewer acres burn (367 acres) on average than fires ignited by humans or human error (2,161 acres).

Natural fires tend to ignite on ridge tops with a lightning strike. The fire then generally spreads downhill and does so more slowly allowing firefighters more time to attack the blaze. Human caused fires tend to start at a canyon bottom, where roads usually are, and race uphill. Simply looking at the fire frequency map for the 91 Freeway Corridor shows you exactly where the canyon bottoms are that catch fire. More fires start along the unprotected edge than those with hardened edges. Measures should be in place to prevent fire ignition and fire spread.

That said, while there was a significant increase in the number of fires occurring between 2012 and 2018, likely due to better tracking, the average fire size (minus the two



big Santa Ana Wind driven fires) was 44 acres. And 23 of these most recent fires burned less than 10 acres.



COMMENTS

We continue to urge agencies to implement policies that reduce the risk of wildfires starting because of their negligence. High heat, high wind, and dry brush only need a spark to cause a devastating fire. Further, easy strategies exist, like weed mats, to reduce ignitions along roadways. This could not only save lives and homes, but also prevent fires from igniting all together. Weed mats do not impede wildlife movement along roadways like k-rails do.

The responsibility for protection of the community from wildland fires lies first with the developer during the planning phase of the development. Governmental jurisdictions also share in this responsibility because decision makers have the power to approve or deny inappropriate developments at the WUI. Additionally, from the resident or buyer perspective—even with the knowledge of a Very High Fire Hazard Severity Zone—they believe the project is safe simply because it was approved.

There is no “buyer beware” argument if government says it is safe. Zoning carries with it the responsibility for consequences. And yes, private homeowners have the responsibility to learn the vulnerabilities of their home and take proactive steps to remedy them where possible. We may be reaching the critical moment, where insurance companies refuse to insure properties at the WUI, or the premiums will sky rocket out of reach.

To reduce the unnatural frequency of fires to a more natural pace: education, outreach, planning, and a shift in approach is needed. HFE is committed to working with planners, natural resource, transportation, and fire agencies to reduce the fire frequency to a more natural fire regime in the Study Area.

Suggestions for Further Study

Similar to our 2012 report, there are many other opportunities that could use further investigation. These old and new ideas include:

2012 Study

- An analysis of the effect of repeated wildfires on habitat loss and its effect on wildlife.
- A historical analysis documenting the loss of valuable vegetation types and type conversion.
- The effects wildfires have on wildlife movement, foraging, reproduction, and survival.
- Whether enforcement measures for fire prevention are adequate.
- The expansion of the WUI and its impacts on the Park.

2018 Study

- The number of homes with defensible space and survival rates post fire.
- Insurance losses and financial consequences of building at the WUI.
- The impact of Edison’s Public Safety Power Shutoff on wildfire fighting, safe evacuation, and water availability/tank refilling.



ACKNOWLEDGEMENTS

About the Authors

Claire and Melanie Schlotterbeck are conservation advocates specializing in the Puente-Chino Hills Wildlife Corridor. This mother-daughter team both work as long time consultants to HFE. Melanie is a technical consultant and works on GIS mapping, land acquisition, research projects, and outreach efforts. More recently, her efforts have resulted in acquisition and restoration projects that benefit the State Park. She earned her bachelor's degree in Environmental Geography and her Master of Science in Environmental Science from Cal State Fullerton. Claire Schlotterbeck is the Executive Director of HFE and has been involved in preservation of the Puente-Chino Hills for over three decades. She played a key role in the formation of the 14,100-acre Chino Hills State Park. Claire earned her bachelor's degree in Political Science from UCLA and a Master of Science from Purdue University.

HFE also gratefully recognizes the contributions of:

- CalFire, Orange County Fire Authority, City of Brea, City of Anaheim, City of Corona, and Chino Valley Independent Fire District for providing data for analysis and inclusion in this study.
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- Wallace Talbert, Senior GIS Analyst with the Orange County Transportation Authority for assistance with the data conversion for the fire frequency maps.



APPENDIX A

Fire Perimeter Data

Fire Name	Fire Date	Acreage Burned	Cause	Point of Origin
Fuel Break (Historical)	—	132	—	—
Prescribed Burn**	—	132	Prescribed Burn	Unknown
Prescribed Burn**	—	90	Prescribed Burn	Unknown
Irvine Ranch	1914	14,830	Unknown	Unknown
Fresno Canyon*	1928	1,007	Unknown	Unknown
Gypsum*	1929	1,085	Unknown	Unknown
Carbon Canyon*	1930	733	Unknown	Unknown
Santa Ana Canyon	Nov. 8, 1943	9,375	Unknown	Unknown
Gaines	Sep. 22, 1944	270	Unknown	Unknown
Shell	July 2, 1947	118	Unknown	Unknown
Green River	Nov. 4, 1948	41,285	Unknown	Unknown
Nohl	June 21, 1951	176	Unknown	Unknown
Santiago	Oct. 15, 1958	110	Unknown	Unknown
La Vida	Nov. 29, 1959	611	Unknown	Unknown
91 Freeway*	1962	139	Unknown	Unknown
Paseo Grande	Oct. 29, 1967	39,872	Unknown	Known
Firestone	Oct. 30, 1967	236	Unknown	Known
Tonner Canyon	June 13, 1971	9	Unknown	Unknown
Serranos	Sep. 9, 1973	304	Unknown	Known
Mine	July 28, 1977	4,956	Unknown	Unknown
Soquel	Oct. 23, 1978	5,428	Unknown	Known
Soquel Canyon*	Oct. 25, 1978	251	Unknown	Unknown
Los Sarranos [Serranos]	June 19, 1979	172	Unknown	Known
Paseo	Sep. 15, 1979	3,644	Sleeper Fire	Known
Corona	1980	116	Unknown	Unknown
Green River	July 13, 1980	379	Unknown	Known
Owl	Oct. 28, 1980	18,332	Unknown	Known
Carbon Canyon	Nov. 16, 1980	14,613	Unknown	Known
Euclid	Oct. 30, 1981	714	Unknown	Known

* indicates the fire name was assigned by Hills For Everyone.

** indicates the fire was added in the 2012-2018 update.

Fire Perimeter Data Continued...

Fire Name	Fire Date	Acreage Burned	Cause	Point of Origin
Fresno Canyon*	Oct. 1982	211	Unknown	Unknown
Gypsum	Oct. 9, 1982	19,986	Powerlines	Known
Santa Ana Canyon*	Fall 1983	443	Unknown	Unknown
Fresno*	July 12, 1983	642	Unknown	Unknown
91 Freeway*	July 13, 1983	1,618	Unknown	Unknown
Bane Canyon*	Sep. 14, 1983	581	Unknown	Unknown
Wardlow Wash*	July 8, 1984	114	Unknown	Unknown
Coal Canyon	July 9, 1984	450	Fireworks (Bottle Rocket)	Known
Coal Canyon	July 2, 1985	540	Plane Crash into Power lines	Known
Shell	Aug. 11, 1985	1,635	Unknown	Known
Green River	Oct. 6, 1985	Less than 1	Unattended Children	Known
Fresno Canyon*	Aug. 2, 1986	95	Unknown	Unknown
Bane Canyon*	June 24, 1988	820	Unknown	Unknown
South Ridge	May 24, 1989	5	Mower hit rock, ignited brush	Known
Aliso Canyon	June 29, 1989	44	Unknown	Unknown
Carbon Canyon	June 27, 1990	6,664	Arson	Known
Yorba	July 12, 1990	7,884	Model Rocket	Known
91 Freeway	July 5, 1991	50	Machinery	Known
San Juan Hill	June 10, 1992	249	Plane Crash	Known
Stagecoach	Oct. 26, 1993	581	Unknown	Unknown
91 Freeway*	1994	41	Unknown	Unknown
Carbon Canyon [Wagon]	June 25, 1994	757	Unknown	Known
91 Freeway*	Aug. 5, 1994	28	Unknown	Known
Prescribed Burn**	1995	494	Prescribed Burn	Unknown
Highway 91	Aug. 26, 1995	177	Unknown	Unknown
Carbon Canyon	Aug. 31, 1998	733	Lightning	Known
Green	Feb. 9, 2002	2,234	Power lines	Known
Evening	Apr. 21, 2002	893	Fireworks	Known
Blue Gum	Nov. 20, 2002	497	Arson	Known
Coal Canyon	July 12, 2003	2	Arson	Known

* indicates the fire name was assigned by Hills For Everyone.

** indicates the fire was added in the 2012-2018 update.



Fire Perimeter Data Continued...

Fire Name	Fire Date	Acreage Burned	Cause	Point of Origin
Green River	July 24, 2004	16	Car Crash	Known
Carbon Canyon	Sep. 25, 2004	18	Car Fire	Known
Yorba Linda	July 5, 2005	1,079	Fireworks	Known
Carbon Canyon	Aug. 4, 2005	1	Arson	Unknown
Prescribed**	2006	43	Prescribed	Unknown
Prescribed**	2006	68	Prescribed	Unknown
Sierra Peak	Feb. 6, 2006	10,506	Backfire	Known
Brush Canyon	July 11, 2006	1	Unknown	Unknown
Blue Gum	Aug. 2, 2006	3	Illegal Campfire	Unknown
241 Incident	Aug. 22, 2006	Less than 1	Unknown	Unknown
Windy Ridge [241 Incident]	Mar. 11, 2007	1,618	Burning Car (Arson)	Known
Rose	Apr. 12, 2007	8	Machinery	Known
Freeway Complex	Nov. 15, 2008	30,306	Auto Exhaust & Power lines	Known
241 Incident	Sep. 25, 2009	Less than 1	Unknown	Unknown
91 Freeway Incident	June 16, 2010	47	Unknown	Known
Carbon Canyon	July 11, 2011	518	Arson	Known
Rose Drive*	Nov. 2, 2011	5	Power lines	Known
Carbon**	July 10, 2014	3	Arson	Known
Highway**	Apr. 18, 2015	1,049	Illegal Campfire	Unknown
Casino**	Sep. 17, 2015	16	Arson	Unknown
Carbon Canyon**	July 4, 2016	Less than 1	Car	Known
YBL Train**	July 16, 2016	Less than 1	Unknown	Known
Canyon**	July 4, 2017	1	Unknown	Unknown
Cross Creek**	Sep. 15, 2017	2	Cigarette	Known
Canyon 1**	Sep. 25, 2017	2,661	Roadflare	Known
Canyon 2**	Oct. 9, 2017	9,215	Roadflare - Sleeper	Known
Lambert**	Oct. 18, 2017	28	Unknown	Unknown
Carbon Canyon Park**	Oct. 25, 2017	4	Unknown	Unknown
Lambert**	May 25, 2018	Less than 1	Car	Unknown
B2 - Yorba**	Sep. 15, 2018	10	Unknown	Unknown
CostCo**	Sep. 29, 2018	1	Accidental	Known

* indicates the fire name was assigned by Hills For Everyone.

** indicates the fire was added in the 2012-2018 update.



APPENDIX B

Fire Causes and Points of Origin Data

Fire Name	Fire Date	Acreage Burned	Cause	Perimeter
Sonome Canyon	Unknown	Unknown	Plane Crash	Unknown
Paseo Grande	Oct. 29, 1967	39,872	Unknown	Known
Firestone	Oct. 30, 1967	236	Unknown	Known
Serranos	Sep. 9, 1973	304	Unknown	Known
Soquel	Oct. 23, 1978	5,428	Unknown	Known
Los Sarranos [Serranos]	June 19, 1979	172	Unknown	Known
Paseo	Sep. 15, 1979	3,644	Smoldering Sleeper Fire	Known
Green River	July 13, 1980	379	Unknown	Known
Owl	Oct. 28, 1980	18,332	Unknown	Known
Carbon Canyon	Nov. 16, 1980	14,613	Unknown	Known
Euclid	Oct. 31, 1981	714	Unknown	Unknown
Gypsum Canyon	Oct. 9, 1982	19,986	Electric Lines	Known
Coal Canyon	July 9, 1984	450	Fireworks (Bottle Rocket)	Known
Coal Canyon	July 2, 1985	540	Plane Crash into Power lines	Known
Shell	Aug. 11, 1985	1,635	Unknown	Known
Green River	Oct. 6, 1985	Unknown	Unattended Children	Known
Coal Canyon	Apr. 21, 1987	25	Vehicle Fire	Unknown
Gypsum Canyon	May 12, 1987	20	Incendiary Device	Unknown
Coal Canyon	July 7, 1987	5	Unknown	Unknown
Coal Canyon	July 28, 1987	10	Unknown	Unknown
Rim Crest	Mar. 13, 1988	10	Kids with Matches	Unknown
Coal Canyon	May 13, 1988	3	Unknown	Unknown
La Vida	Dec. 4, 1988	Unknown	Unknown	Unknown
South Ridge	May 24, 1989	5	Mower hit rock, ignites brush	Known
Carbon Canyon	July 5, 1989	Unknown	Unknown	Unknown
Featherly Regional Park	July 14, 1989	Unknown	Unknown	Unknown

Fire Causes and Points of Origin Data Continued...

Fire Name	Fire Date	Acreage Burned	Cause	Perimeter
Chino Hills State Park	Oct. 10, 1989	400	Unknown	Unknown
Carbon Canyon	June 27, 1990	6,664	Arson	Known
Yorba	July 12, 1990	7,884	Model Rocket	Known
Carbon Canyon	July 22, 1990	1	Unknown	Unknown
Carbon Canyon	July 27, 1990	2	Downed Power line	Unknown
91 Freeway	July 5, 1991	245	Machinery	Known
Coal Canyon	May 10, 1992	3	Unknown	Unknown
San Juan Hill	June 10, 1992	249	Plane Crash	Known
Chino Hills State Park	Sep. 8, 1992	500	Power lines	Unknown
Carbon Canyon	Nov. 15, 1993	40	Plane Crash	Unknown
Carbon Canyon [Wagon]	June 25, 1994	757	Unknown	Known
91 Freeway	Aug. 5, 1994	28	Unknown	Known
71 Freeway	Dec. 19, 1994	4	Unknown	Unknown
Carbon Canyon	June 24, 1998	20	Road Flare (Arson)	Unknown
Carbon Canyon	Aug. 31, 1998	733	Lightning	Known
Chino Hills State Park	Jan. 19, 1999	Unknown	Plane Crash	Unknown
Woodview	Sep. 12, 2000	200	Unknown	Unknown
Chino Hills Parkway	Sep. 18, 2000	2	Unknown	Unknown
Green	Feb. 9, 2002	2,234	Downed Power lines	Known
Evening	Apr. 21, 2002	893	Fireworks	Known
71 Freeway	Aug. 3, 2002	10	Car Exhaust Pipe	Unknown
Blue Gum	Nov. 20, 2002	497	Arson	Known
Coal Canyon	July 12, 2003	2	Arson	Known
71 Freeway	Aug. 19, 2003	3	Unknown	Unknown
Coal Canyon	May 30, 2004	2	Unknown	Unknown
Green River	July 24, 2004	16	Car Crash	Known
Carbon Canyon	Sep. 25, 2004	18	Car Fire	Known
Yorba Linda	July 5, 2005	1,079	Illegal Fireworks	Known
Sierra Peak	Feb. 6, 2006	10,506	Back Fire	Known
Brush Canyon	July 23, 2006	1	Lightning	Unknown

Fire Causes and Points of Origin Data Continued...

Fire Name	Fire Date	Acreage Burned	Cause	Perimeter
Feldspar	Sep. 26, 2006	Unknown	Car Crash	Unknown
Red Star	Jan. 7, 2007	175	Unknown	Unknown
Windy Ridge [241 Incident]	Mar. 11, 2007	1,618	Burning Car (Arson)	Known
Rose	Apr. 12, 2007	3	Machinery	Known
Coal Canyon	May 7, 2007	140	Caltrans Machinery	Unknown
Western Hills	May 16, 2008	15	Downed Power lines	Unknown
Freeway Complex	Nov. 15, 2008	30,306	Auto Exhaust Power lines	Known
Windy Ridge	Nov. 25, 2009	80	Unknown	Unknown
Coal Canyon	Mar. 16, 2010	Unknown	Car Accident	Unknown
91 Freeway Incident	June 16, 2010	47	Unknown	Known
Quarter Horse	Sep. 4, 2010	10	Fireworks	Unknown
Carbon Canyon	July 11, 2011	518	Arson	Known
Rose Drive	Nov. 2, 2011	5	Power lines	Known
Tonner Canyon**	July 2, 2012	Less than 1	Arson	Unknown
Carbon**	June 10, 2014	Unknown	Arson	Known
91 Freeway**	Sep. 10, 2014	Unknown	Unknown	Unknown
Carbon Canyon**	Oct. 5, 2014	Unknown	Unknown	Unknown
91 Freeway**	Apr. 17, 2015	Unknown	Unknown	Unknown
91 Freeway**	May 22, 2015	Less than 1	Car	Unknown
Fairmont**	July 4, 2015	1	Fireworks	Unknown
91 Freeway**	July 14, 2015	Unknown	Car	Unknown
Tonner Canyon**	Oct. 9, 2015	Unknown	Unknown	Unknown
57 Freeway**	July 2, 2016	Unknown	Unknown	Unknown
Carbon Canyon**	July 4, 2016	Less than 1	Car	Known
Carbon Canyon**	July 4, 2016	2	Fireworks	Unknown
Olinda Ranch**	July 4, 2016	5	Arson	Unknown
YBL Train**	July 16, 2016	Less than 1	Unknown	Known

** indicates the fire was added in the 2012-2018 update.



Fire Causes and Points of Origin Data Continued...

Fire Name	Fire Date	Acreage Burned	Cause	Perimeter
57 Freeway**	Aug 12, 2016	Unknown	Unknown	Unknown
57 Freeway**	Aug. 24, 2016	Unknown	Car	Unknown
57 Freeway**	Aug. 24, 2016	1	Unknown	Unknown
Valencia**	Apr. 23, 2017	Unknown	Unknown	Unknown
Santa Fe**	Apr. 23, 2017	Less than 1	Arson	Unknown
57 Freeway**	May 2, 2017	1	Unknown	Unknown
Gypsum**	July 3, 2017	Unknown	Unknown	Unknown
Tonner Canyon**	July 3, 2017	Less than 1	Arson	Unknown
Cross Creek**	Sep. 15, 2017	2	Cigarette	Known
Canyon 1**	Sep. 25, 2017	2,661	Road Flare	Known
57 Freeway**	Sep. 25, 2017	Unknown	Unknown	Unknown
Canyon 2**	Oct. 9, 2017	9,215	Road Flare - Sleeper	Known
91 Freeway**	Oct. 23, 2017	Unknown	Unknown	Unknown
Carbon Canyon**	Oct. 25, 2017	5	Unknown	Unknown
Carbon Canyon Park**	Oct. 25, 2017	5	Unknown	Unknown
Carbon Ridge**	Jan. 18, 2018	Unknown	Unknown	Unknown
57 Freeway**	Apr. 28, 2018	Unknown	Unknown	Unknown
57 Freeway**	May 18, 2018	5	Unknown	Unknown
91 Freeway**	Aug. 2, 2018	Unknown	Unknown	Unknown
Yorba Linda**	Aug. 10, 2018	Unknown	Unknown	Unknown
91 Freeway**	Sep. 15, 2018	Less than 1	Unknown	Unknown
CostCo**	Sep. 29, 2018	Less than 1	Accidental	Known

** indicates the fire was added in the 2012-2018 update.



APPENDIX C

All Fires Combined (Perimeters and Points of Origin) Data

Fire Name	Fire Date	Acreage Burned	Cause	Data Type
Fuel Break (Historical)	—	132	—	Perimeter
Prescribed Burn**	—	90	Prescribed Burn	Perimeter
Prescribed Burn**	—	132	Prescribed Burn	Perimeter
Sonome Canyon	Unknown	Unknown	Plane Crash	Point of Origin
Irvine Ranch	1914	14,830	Unknown	Perimeter
Fresno Canyon*	1928	1,007	Unknown	Perimeter
Gypsum*	1929	1,085	Unknown	Perimeter
Carbon Canyon*	1930	733	Unknown	Perimeter
Santa Ana Canyon	Nov. 8, 1943	9,375	Unknown	Perimeter
Gaines	Sep. 22, 1944	270	Unknown	Perimeter
Shell	July 2, 1947	118	Unknown	Perimeter
Green River	Nov. 4, 1948	41,285	Unknown	Both
Nohl	June 21, 1951	176	Unknown	Perimeter
Santiago	Oct. 15, 1958	110	Unknown	Perimeter
La Vida	Nov. 29, 1959	611	Unknown	Perimeter
91 Freeway*	1962	139	Unknown	Perimeter
Paseo Grande	Oct. 29, 1967	39,872	Unknown	Both
Firestone	Oct. 30, 1967	236	Unknown	Both
Tonner Canyon	June 13, 1971	9	Unknown	Perimeter
Serranos	Sep. 9, 1973	304	Unknown	Both
Mine	July 28, 1977	4,956	Unknown	Perimeter
Soquel	Oct. 23, 1978	5,428	Unknown	Both
Soquel Canyon*	Oct. 25, 1978	251	Unknown	Perimeter
Los Serranos [Serranos]	June 19, 1979	172	Unknown	Both
Paseo	Sept. 15, 1979	3,644	Sleeper Fire	Both

* indicates the fire name was assigned by Hills For Everyone.

** indicates the fire was added in the 2012-2018 update.

All Fires Combined (Perimeters and Points of Origin) Data Continued...

Fire Name	Fire Date	Acreage Burned	Cause	Data Type
Corona	1980	116	Unknown	Perimeter
Green River	July 13, 1980	379	Unknown	Both
Owl	Oct. 28, 1980	18,332	Unknown	Both
Carbon Canyon	Nov. 16, 1980	14,613	Unknown	Both
Euclid	Oct. 30, 1981	714	Unknown	Both
Fresno Canyon*	Oct. 1982	211	Unknown	Perimeter
Gypsum	Oct. 9, 1982	19,986	Power lines	Both
Santa Ana Canyon*	Fall 1983	443	Unknown	Perimeter
Fresno*	July 12, 1983	642	Unknown	Perimeter
91 Freeway*	July 13, 1983	1,618	Unknown	Perimeter
Bane Canyon*	Sep. 14, 1983	581	Unknown	Perimeter
Wardlow Wash*	July 8, 1984	114	Unknown	Perimeter
Coal Canyon	July 9, 1984	450	Fireworks (Bottle Rocket)	Both
Coal Canyon	July 2, 1985	540	Plane Crash into Power lines	Both
Shell	Aug. 11, 1985	1,635	Unknown	Both
Green River	Oct. 6, 1985	Less than 1	Unattended Children	Both
Fresno Canyon*	Aug. 2, 1986	95	Unknown	Perimeter
Coal Canyon	Apr. 21, 1987	25	Car Fire	Point of Origin
Gypsum Canyon	May 12, 1987	20	Incendiary Device	Point of Origin
Coal Canyon	July 7, 1987	5	Unknown	Point of Origin
Coal Canyon	July 28, 1987	10	Unknown	Point of Origin
Rim Crest	Mar. 13, 1988	10	Kids with Matches	Point of Origin
Coal Canyon	May 13, 1988	3	Unknown	Point of Origin
Bane Canyon*	June 24, 1988	820	Unknown	Perimeter
La Vida	Dec. 4, 1988	Unknown	Unknown	Point of Origin
South Ridge	May 24, 1989	5	Mower hit rock, ignited brush	Both
Aliso Canyon	June 29, 1989	44	Unknown	Perimeter
Carbon Canyon	July 5, 1989	Unknown	Unknown	Point of Origin
Featherly Regional Park	July 14, 1989	Unknown	Unknown	Point of Origin

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** indicates the fire was added in the 2012-2018 update.

All Fires Combined (Perimeters and Points of Origin) Data Continued...

Fire Name	Fire Date	Acreage Burned	Cause	Data Type
Chino Hills State Park	Oct. 10, 1989	400	Unknown	Point of Origin
Carbon Canyon	June 27, 1990	6,664	Arson	Both
Yorba	July 12, 1990	7,884	Model Rocket	Both
Carbon Canyon	July 22, 1990	1	Unknown	Point of Origin
Carbon Canyon	July 27, 1990	2	Downed Power lines	Point of Origin
91 Freeway	July 5, 1991	50	Machinery	Both
Coal Canyon	May 10, 1992	3	Unknown	Point of Origin
San Juan Hill	June 10, 1992	249	Plane Crash	Both
Chino Hills State Park	Sep. 8, 1992	500	Power lines	Point of Origin
Stagecoach	Oct. 26, 1993	581	Unknown	Perimeter
Carbon Canyon	Nov. 15, 1993	40	Plane Crash	Point of Origin
91 Freeway*	1994	41	Unknown	Perimeter
Carbon Canyon [Wagon]	June 25, 1994	757	Unknown	Both
91 Freeway*	Aug. 5, 1994	28	Unknown	Both
71 Freeway	Dec. 19, 1994	4	Unknown	Point of Origin
Prescribed Burn	1995	494	Prescribed Burn	Perimeter
Highway 91	Aug. 26, 1995	177	Unknown	Perimeter
Carbon Canyon	June 24, 1998	20	Road Flare (Arson)	Point of Origin
Carbon Canyon	Aug. 31, 1998	733	Lightning	Both
Chino Hills State Park	Jan. 19, 1999	Unknown	Plane Crash	Point of Origin
Woodview	Sep. 12, 2000	200	Unknown	Point of Origin
Chino Hills Parkway	Sep. 18, 2000	2	Unknown	Point of Origin
Green	Feb. 9, 2002	2,234	Downed Power lines	Both
Evening	Apr. 21, 2002	893	Fireworks	Both
71 Freeway	Aug. 3, 2002	10	Car Exhaust Pipe	Point of Origin
Blue Gum	Nov. 20, 2002	497	Arson	Both
Coal Canyon	July 12, 2003	2	Arson	Both
71 Freeway	Aug. 19, 2003	3	Unknown	Point of Origin

* indicates the fire name was assigned by Hills For Everyone.

** indicates the fire was added in the 2012-2018 update.



All Fires Combined (Perimeters and Points of Origin) Data Continued...

Fire Name	Fire Date	Acreage Burned	Cause	Data Type
Coal Canyon	May 30, 2004	2	Unknown	Point of Origin
Green River	July 24, 2004	16	Car Crash	Both
Carbon Canyon	Sep. 25, 2004	18	Car Fire	Both
Yorba Linda	July 5, 2005	1,079	Fireworks	Both
Carbon Canyon	Aug. 4, 2005	1	Arson	Perimeter
Prescribed	2006	43	Prescribed	Perimeter
Prescribed**	2006	68	Prescribed	Perimeter
Sierra Peak	Feb. 6, 2006	10,506	Backfire	Both
Brush Canyon	July 11, 2006	1	Unknown	Perimeter
Brush Canyon	July 23, 2006	1	Lightning	Point of Origin
Blue Gum	Aug. 2, 2006	3	Illegal Campfire	Perimeter
241 Incident	Aug. 22, 2006	Less than 1	Unknown	Perimeter
Feldspar	Sep. 26, 2006	Unknown	Car Crash	Point of Origin
Red Star	Jan. 7, 2007	175	Unknown	Point of Origin
Windy Ridge [241 Incident]	Mar. 11, 2007	1,618	Burning Car (Arson)	Both
Rose	Apr. 12, 2007	8	Machinery	Both
Coal Canyon	May 7, 2007	140	Caltrans Machinery	Point of Origin
Western Hills	May 16, 2008	15	Downed Power lines	Point of Origin
Freeway Complex	Nov. 15, 2008	30,306	Car Exhaust & Power lines	Both
241 Incident	Sep. 25, 2009	Less than 1	Unknown	Perimeter
Windy Ridge	Nov. 25, 2009	80	Unknown	Point of Origin
Coal Canyon	Mar. 16, 2010	Unknown	Car Crash	Point of Origin
91 Freeway Incident	June 16, 2010	47	Unknown	Both
Quarter Horse	Sep. 4, 2010	10	Fireworks	Point of Origin
Carbon Canyon	July 11, 2011	518	Arson	Both
Rose Drive*	Nov. 2, 2011	5	Power lines	Both
Tonner Canyon**	July 2, 2012	Less than 1	Arson	Point of Origin
Highway**	Apr. 18, 2014	1049	Campfire	Perimeter
Carbon**	June 10, 2014	3	Arson	Both
91 Freeway**	Sep. 10, 2014	Unknown	Unknown	Point of Origin
Casino**	Sep. 17, 2014	16	Arson	Perimeter
Carbon Canyon**	Oct. 5, 2014	Unknown	Unknown	Point of Origin

* indicates the fire name was assigned by Hills For Everyone.

** indicates the fire was added in the 2012-2018 update.

All Fires Combined (Perimeters and Points of Origin) Data Continued...

Fire Name	Fire Date	Acreage Burned	Cause	Data Type
Highway**	Apr. 8, 2015	1,049	Illegal Campfire	Perimeter
91 Freeway**	Apr. 17, 2015	Unknown	Unknown	Point of Origin
91 Freeway**	May 22, 2015	Less than 1	Car	Point of Origin
Fairmont**	July 4, 2015	1	Fireworks	Point of Origin
91 Freeway**	July 14, 2015	Unknown	Car	Point of Origin
Casino**	Sep. 17, 2015	16	Arson	Perimeter
Tonner Canyon**	Oct. 9, 2015	Unknown	Unknown	Point of Origin
57 Freeway**	July 2, 2016	Unknown	Unknown	Point of Origin
Carbon Canyon**	July 4, 2016	Less than 1	Car	Both
Carbon Canyon**	July 4, 2016	2	Fireworks	Point of Origin
Olinda Ranch**	July 4, 2016	5	Arson	Point of Origin
YBL Train**	July 16, 2016	Less than 1	Unknown	Both
57 Freeway**	Aug. 12, 2016	Less than 1	Unknown	Point of Origin
57 Freeway**	Aug. 24, 2016	Unknown	Car	Point of Origin
57 Freeway**	Aug. 24, 2016	1	Unknown	Point of Origin
Valencia**	Apr. 23, 2017	Unknown	Unknown	Point of Origin
Santa Fe**	Apr. 23, 2017	Less than 1	Arson	Point of Origin
57 Freeway**	May 2, 2017	1	Unknown	Point of Origin
Gypsum**	July 3, 2017	Unknown	Unknown	Point of Origin
Tonner Canyon**	July 3, 2017	Less than 1	Arson	Point of Origin
Canyon**	July 14, 2017	1	Unknown	Perimeter
Cross Creek**	Sep. 15, 2017	2	Cigarette	Both
57 Freeway**	Sep. 25, 2017	Unknown	Unknown	Point of Origin
Canyon 1**	Sep. 25, 2017	2,661	Road Flare	Both
Canyon 2**	Oct. 9, 2017	9,215	Road Flare - Sleeper	Both
Lambert**	Oct. 18, 2017	28	Unknown	Perimeter
91 Freeway**	Oct. 23, 2017	Unknown	Unknown	Point of Origin
Carbon Canyon**	Oct. 25, 2017	5	Unknown	Point of Origin
Carbon Canyon Park**	Oct. 25, 2017	4	Unknown	Perimeter
Carbon Ridge**	Jan. 18, 2018	Unknown	Unknown	Point of Origin
57 Freeway**	Apr. 28, 2018	Unknown	Unknown	Point of Origin
57 Freeway**	May 18, 2018	5	Unknown	Point of Origin
91 Freeway**	Aug. 2, 2018	Unknown	Unknown	Point of Origin

* indicates the fire name was assigned by Hills For Everyone.

** indicates the fire was added in the 2012-2018 update.



All Fires Combined (Perimeters and Points of Origin) Data Continued...

Fire Name	Fire Date	Acreage Burned	Cause	Data Type
Yorba Linda**	Aug. 10, 2018	Unknown	Unknown	Point of Origin
B2 - Yorba**	Sep. 15, 2018	10	Unknown	Perimeter
91 Freeway**	Sep. 15, 2018	Less than 1	Unknown	Point of Origin
Lambert**	May 25, 2018	Less than 1	Car	Perimeter
CostCo**	Sep. 29, 2018	1	Accidental	Both

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** indicates the fire was added in the 2012-2018 update.



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