



Valley Hi Ranch Estates

Jefferson County, CO

Neighborhood Wildfire Protection Plan

December, 2013

**Valley Hi Ranch Estates
Homeowners Association**

Jefferson County

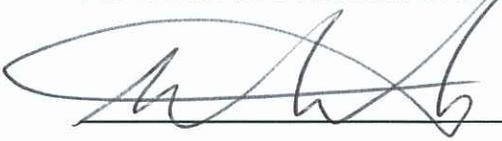
This plan has been reviewed and approved by the Elk Creek Fire Protection District and the Valley Hi Homeowners Association.



Date:

12/20/13

Bill McLaughlin
Fire Chief
Elk Creek Fire Protection District



Date:

12/20/2013

Steven Szutenbach
President
Valley Hi Estates Homeowners Association

About the Author

Flint Cheney has been a resident of Valley Hi Estates since 2000. He holds a Bachelors of Science degree in Forest Management Science from Colorado State University (1985).

Flint began a career with the US Forest Service in 1982, and was still employed there as of the time this document was written. He has been active in wildland fire suppression and management for more than 30 years. Currently, he holds the position of Planning Section Chief on one of the federal incident management teams.

Between 1996 and 2002, Flint was part of a national advisory group for the National Fire Danger Rating System. His current position with the US Forest Service is Assistant Director for Fire Management for the Rocky Mountain Region. His duties include strategic planning, fire modeling, and currently (2013) sits as chairman of the Fire Danger Rating Committee for the Rocky Mountain Coordinating Group (a multi-agency group that directs wildland fire management policy).

Area Description

Valley Hi Ranch Estates (Filings 1 and 2) is a subdivision of 109 lots totaling about 150 acres in west-central Jefferson County. Two of the 109 lots do not have a residence on them as of the date of this plan. The subdivision's south boundary is directly adjacent to the Flying J Ranch Open Space. Valley Hi is densely forested in mixed conifer (primarily Ponderosa Pine, Lodgepole Pine, and Douglas-fir), with varying terrain. Many of the lots within Valley Hi have some amount of dead timber, both standing and downed.

Valley Hi subdivision has two public entrances at the lower elevations, with a gated two-track dirt road at the end of William Cody Drive that accesses Flying J Ranch Open Space, and is not open to the public for vehicle travel. All public roads within the subdivision are paved and maintained by Jefferson County Road and Bridge. These roads are wide enough for two-way traffic for standard passenger vehicles, but can be confining for larger vehicles. Private driveways are often steep and narrow with tight bends. Access may be difficult for larger structure fire engines.

The physical setting shows Valley Hi is surrounded by open meadows and/or roads around approximately 90% of the perimeter of the subdivision (Photo 1). There is County highway 73 to the east, Blue Creek Road to the north, and Fleming Road to the northwest and west. Flying J Ranch Open Space has several dirt roads adjacent to Valley Hi that could be accessed by fire equipment. The remaining 10% of the perimeter that does not have a natural fuel break or a road is on the southwest corner of the subdivision.

Most of the homes within Valley Hi were built in the 1980's and 1990's, with some newer construction over the past 10 years. All of the homes built early during the development of Valley Hi were wood-frame houses with wood siding, wood decks and wood shingle roofs. Today, most of the homes wood shingle roofs have been replaced with newer class A (non-combustible) materials. Several homeowners have replaced their old wood decks with composite material decking¹, and only a few homeowners have replaced the wood siding with a more fire-resistant siding.

The closest fire station associated with Elk Creek Fire Protection District is at Aspen Park, about three miles to the south on State Highway 285. However, there is a closer fire station associated with Evergreen Fire & Rescue that is about two miles north on County Road 73 (Marshdale area), although Valley Hi subdivision is not within their response area. There are no fire hydrants in the subdivision due to the lack of a public water system. There are also no underground fire cisterns in the area. Each residence in the subdivision has a well which provides domestic water. These wells cannot support any significant firefighting effort.

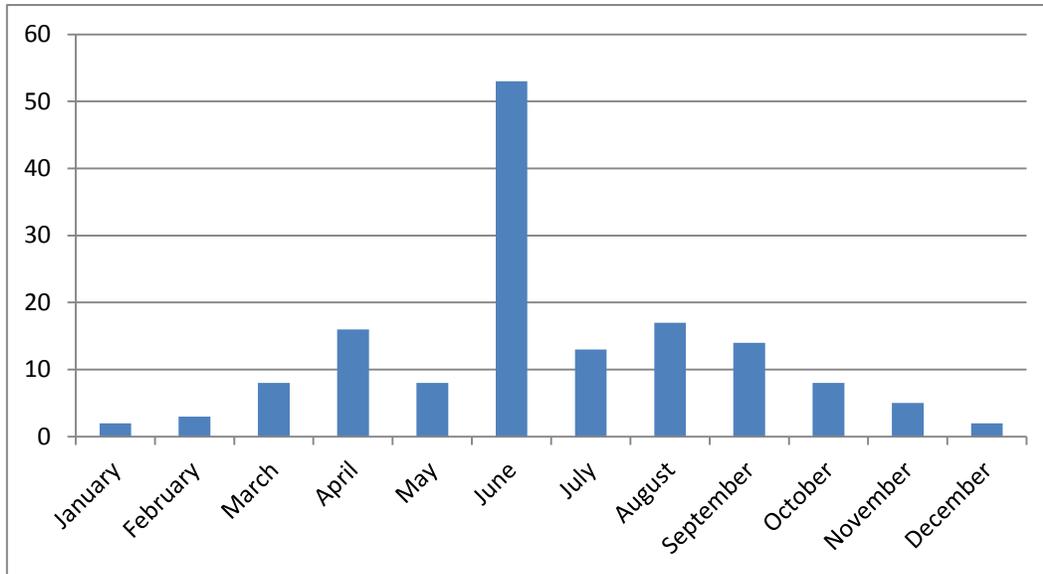
Local Fire History

Over the past 15 years, there have been numerous wildland fires that have been close enough to Valley Hi to be of concern. In 2002 and 2013, Valley Hi subdivision was under evacuation notification from several local fires, although no fire entered the subdivision. Many of these recent fires have destroyed numerous homes. In March of 2012, one fire, less than 10 miles south of Valley Hi, took the lives of three residences that were unable to evacuate in time.

There are indications of previous fire activity within Valley Hi subdivision before development occurred, likely 80 to 130 years ago. There are several charred stumps and logs scattered around the subdivision. Scientific research shows that the ecosystem that we live in (Ponderosa Pine, Lodgepole Pine, and Douglas-fir) is fire-dependent, and that a lack of routine fire occurrence typically leads to infrequent high-intensity fires, and thus has a high resistance to control (Agee, 1993).

Annual Fire Cycle and Fire Danger

The graph below shows the number of fires greater than 100 acres for the years 1994 thru 2013 within the Colorado Front Range counties². The month of June is by far the most critical month for large destructive fires. More than one third of the annual large fires occur in the month of June.



Graph 1. Number of fires, by month, greater than 100 acres for the years 1994 thru 2013 for Colorado Front Range counties².

The Front Range area of Colorado typically has three high fire danger periods during a given year. The first of these is late winter and early spring, when snowfall has been light, and most of the snow has melted from south aspect slopes and winter winds have dried any moisture from the vegetation. At this time of year, there are no green grasses or shrubs and humidity is typically low, so all fine vegetation is available to burn. With the typical winds at this time of year, fires can burn very fast and intensely. Fires at this time of year are almost always human-caused, as there is not enough atmospheric heating to create lightning.

Typically, by late April and throughout May, temperatures have warmed up enough to get the grasses and shrubs greened up to a point that they will not easily burn. If spring moisture has been light, it is still possible to get a fire in closed canopy timber stands where there is not enough sunlight on the forest floor for grasses to grow. Although fires can occur in this setting at this time of year, they are rare and usually low intensity and relatively easy to control, unless driven by strong winds.

The second high fire danger period occurs by early June, when much of the effects of the spring green-up have faded, and grasses and shrubs begin losing moisture due to daytime heating, long daylight hours, low relative humidity, and lack of significant rain events. By this time of the year, lightning typically accompanies any rainstorms. If the area has not received significant rains, this time of year can bring the highest fire danger of the year due to the dryness, occasional lightning, and presence of people out in the forest recreating and working.

By the first week of July, we typically see the influence of the Southwest monsoon rains. Depending upon how strong the monsoon flow is, this weather event may be weak to strong, and the amount of rainfall can vary greatly. If there is significant moisture with these storms, the perennial grasses will go back into a green phase, reducing fire danger for several weeks. If monsoon moisture is lacking, the grasses and shrubs will not respond and fire danger remains elevated.

The third high fire danger period begins by mid-August, when the monsoon rain pattern typically subsides and the grasses and shrubs begin another drying trend and eventually go into a fall cured state, especially after the first frost. With the lack of green grass and shrubs, most of the fine vegetation is available to burn, and fire danger can be very high on warm, dry windy days.

By late October or early November, the area has typically received its first snowfall. With the rapidly shortening daylight hours, higher relative humidity, and more frequent moisture events, fire danger diminishes enough to be of little concern at this time of year.

The above fire danger cycle assumes "normal" weather patterns. Anyone who has lived in this area for any length of time will agree, our weather is rarely normal. It is usually changing back and forth between extremes, so the weather descriptions above are only a guideline. Wildfires have occurred in all months of the year in Jefferson County, when temporary dry conditions and winds coincide with an ignition in available fuels.

It is common for the National Weather Service to issue "Red Flag Warnings" or "Fire Weather Watches" to alert the public about the onset, or possible onset, of critical weather and fuel moisture conditions that could lead to rapid or dramatic increases in wildfire activity. These are typically short-duration events caused by low relative humidity, strong winds, dry fuels, or any combination thereof that elevates the risk for extreme wildland fire behavior (National Weather Service, Fire Weather Annual Operating Plan, 2013).

Fire bans are often issued when the fire danger is elevated, and expected to be so for an extended period of time. These bans can be issued by various authorities, including Federal, State and County offices. The land that is under restriction may vary from time to time, so it is important to be aware of the agency issuing the ban. The Colorado Office of Emergency Management hosts an internet webpage that identifies locations that are under fire bans (<http://www.coemergency.com/p/fire-bans-danger.html>).

Plan Structure

This Neighborhood Wildfire Protection Plan (NWPP) is the compilation of other large-scale planning documents that preceded it, specifically the Community Wildfire Protection Plan (CWPP) done in 2011 by the Jefferson Conservation District, in conjunction with Jefferson County Department of Emergency Management, Colorado State Forest Service, and US Forest Service. The Community Wildfire Protection Plan was developed according to the guidelines set forth by the Healthy Forest Restoration Act of 2003 (<http://www.gpo.gov/fdsys/pkg/BILLS-108hr1904enr/pdf/BILLS-108hr1904enr.pdf>), and the Colorado State Forest Service - Minimum Standards for Community Wildfire Protections Plans of 2004 (http://csfs.colostate.edu/pdfs/FINAL_Revised_CWPP_Minimum_Standards_111309.pdf).

Since this NWPP is a logical extension to the Elk Creek Fire Protection District CWPP, the contents of that guiding document are not repeated here. Accordingly, the reader needs to review the Elk Creek Fire Protection District CWPP to place this NWPP in the proper context.

Both, the CWPP and this NWPP, heavily embrace the principles of Firewise Communities/USA.

Firewise Communities/USA

The Firewise Communities/USA goal is to promote community-wide participation in the use of expertise, policy and practices that minimize the loss of life and property to wildfire, independent of firefighting efforts. With little or no preparation before a wildfire event, property loss and damage can be extensive. However, with an action plan and regular attention to community wildfire mitigation, wildfire can occur with little to no lasting effect on homeowners. This fact has been illustrated repeatedly around the United States.

Wildfires will continue in the wildland/urban interface as a natural occurrence. Communities will continue to be affected by them. While wildfire management agencies (federal, state, county, and local fire protection districts) would like to help homeowners avoid home loss, essentially all houses are located on private property. What happens around homes on private property is at the discretion of the individual homeowners. Often, homeowners are under the impression that there is nothing they can do, or that wildfire mitigation is too difficult for them or prohibitively expensive. Unlike other natural disasters (earthquakes, tornadoes, hurricanes, etc.), homeowners can change the behavior of wildland fire if they take the recommended actions mentioned in this plan.

The Firewise Communities program provides current information to homeowners and communities that help them change this situation. Property owners who participate in the Firewise process create an action plan that commits them to a sustained program of wildfire mitigation that is generally both physically doable and cost-effective. The homeowners learn about the threat of wildfire to their property so they can create their own, unique solutions to their wildfire mitigation challenges.

When homeowners understand there is something they can do to reduce the threat of fire to their property, they are more likely to act. Neighbors can help other neighbors—and that they are often linked together in their mitigation solutions, especially among adjoining properties.

One benefit of participating in the Firewise Communities program is that communities receive continuing support because of the communication that occurs among the Firewise Board, the local fire department and state or federal agency representatives. The action plan created by each community is implemented by way of annual Firewise Day events and, thus, wildfire readiness improves in the long term.

Wildfire Hazard Assessment:

The Firewise Communities/USA program is designed to provide an effective management approach for preserving wildland living aesthetics. The program can be tailored for adoption by any community and/or neighborhood association that is committed to ensuring its citizens maximum protection from wildland fire. The following assessment was used to create this NWPP and action plan. This NWPP is intended to be a collaborative process, and updated and modified as needed.

Valley Hi Estates is located in a fire-adapted ecosystem. Wildfires will happen; exclusion is not a choice. The variables in a fire scenario are when the fire will occur, and where. This assessment addresses the wildfire-related characteristics of Valley Hi. It examines the area's exposure to wildfire as it relates to ignition potential. The assessment focuses both on the subdivision as a whole, and on individual lots if a homeowner wants a more detailed assessment of their property.

A house burns because of its interrelationship with everything in its surrounding home ignition zone—the house and its immediate surroundings. To avoid a home ignition, a homeowner must eliminate the wildfire's potential relationship with the house. This can be partially accomplished by interrupting the natural path a fire takes. Changing a fire's path by treating the home ignition zone is an easy-to-accomplish task that can greatly reduce the chance of home loss. To accomplish this,

flammable items such as dead vegetation and other combustible material must be removed from the area immediately around the structure to prevent flames from contacting it.

Reducing the volume of live vegetation will affect the intensity of the wildfire as it enters the home ignition zone. The ease at which a home will ignite under severe wildfire conditions and how these ignitions might be avoided within the home ignition zones of affected residents, can be identified by individual home assessments. Residents can reduce their risk of loss during a wildfire by taking actions within their home ignition zones. This zone largely determines the potential for home ignitions during a wildland fire; it includes the house and its surroundings. The result is that wildfire behavior will be determined by the characteristics of this area. By following the action plan strategies listed later in this plan, residents will be able to substantially reduce their exposure to loss. Relatively small investments of time and effort will reap great rewards in reducing wildfire risk.

Fire intensity and spread rate depend on the fuel type and condition (live/dead), the volume of fuel available to burn, the weather conditions prior to and during ignition, and the topography. The following dynamics determine fire behavior and the fuel, weather and topography.

- Fine fuels ignite more easily and spread faster with higher intensities than larger fuels. For a given fuel, the more there is and the more continuous it is, the faster the fire spreads and the higher the intensities. Fine fuels take a shorter time to burn out than coarser fuels.
- Weather conditions affect the moisture content of the dead and live vegetative fuels. Dead fine fuel moisture content is highly dependent on the relative humidity and the degree of sun exposure. The lower the relative humidity and the greater the sun exposure, the lower will be the fuel moisture content. Lower fuel moistures produce higher spread rates and fire intensities.
- Wind speed significantly influences the rate of fire spread and fire intensity. The higher the wind speed, the greater the spread rate and intensity.
- Topography influences fire behavior principally by the steepness of the slope. However, the configuration of the terrain such as narrow draws, saddles and so forth can influence fire spread and intensity. In general, the steeper the slope, the higher the uphill fire spread and intensity.

The Firewise Communities program seeks to create a sustainable balance that will allow property owners to live safely while maintaining environmental harmony in a wildland urban interface setting. Homeowners need to balance their decisions about fire protection measures against their desire for certain flammable components on their properties.

Threat basis

In 2005, the Elk Creek Fire Protection District CWPP included a science-based study of relative wildfire risk areas within the District's response area. Valley Hi subdivision falls within the "Evergreen Meadows West" risk zone. This risk zone received a Hazard Severity Assessment score of 67 (high end of Moderate). The hazard assessment score ranges from a low of 9 to a high of 171. The higher the number, the higher the potential risk of catastrophic fire. As a comparison, all of the 44 risk zones within the Elk Creek Fire Protection District response area had a Hazard Severity Assessment score of between 54 and 115. The average was about 82. Table 1 shows the hazard assessment rating as compared to the assessment score.

Table 1. National Fire Protection Association Hazard Severity Assessment score ratings.

Score	Hazard Assessment
< 39	Low Hazard
40 - 69	Moderate Hazard
70 - 112	High Hazard
113 - 171	Extreme Hazard

Although the assessment score for the Evergreen Meadows West zone (Valley Hi) of 67 is relatively low compared to the other zones within the fire districts response area, it doesn't mean that Valley Hi subdivision is resistant to wildfire. The potential risk is present, and there is room for improvement. Reducing the hazard assessment score will make our properties less susceptible to a destructive wildland fire. This effort is accomplished by following the steps lined out in the action plan strategy addressed later in this document.

Jefferson County Open Space has accomplished significant timber thinning work in Flying J Ranch on the areas bordering Valley Hi. The thinned areas in Flying J Ranch reduce the threat of fire entering the subdivision. Jefferson County began this work in 2004, several years after the property was acquired from the former landowner. Timber thinning work continues within Flying J Ranch on areas bordering other subdivisions that share a common border with the park.

Firewise requirements:

The following criteria must be met in order to meet the Firewise Communities/USA recognition:

1. Form a neighborhood Firewise board or committee.
2. Obtain a written wildfire risk assessment.
3. Create an action plan based on the assessment.
4. Conduct a "Firewise Day" event.
5. Invest a minimum of \$2 per capita in local Firewise actions per year.
6. Submit an application to your state Firewise liaison.

The following list identifies how Valley Hi Estates will meet the criteria listed above.

1. Form a neighborhood Firewise board or committee.
The board will be made up of the following individuals:
 - Neighborhood Firewise Coordinator (Flint Cheney).
 - Homeowners Association President (Steve Szutenbach).
 - Additional committee members: Bob Hawsey, Dick Blodgett, Don Clements.
 - Neighborhood Firewise record keeping and documentation (Laurel Cheney).

2. Obtain a written wildfire risk assessment.
 - The Community Wildfire Protection Plan, plus this NWPP, and contents within it, fulfills the risk assessment requirement for the neighborhood as a whole.
 - Due to the variability of vegetation and exposure within the subdivision, the neighborhood Firewise committee members will conduct optional individual assessment for each property within the neighborhood. This will be done with the Firewise Individual Property Assessment form. Once completed, a copy will be given to each property owner, and another copy kept on file with the neighborhood Firewise coordinator.
3. Create an action plan based on the assessment.
 - This Neighborhood Wildfire Protection Plan document will serve as the action plan. See the Action Plan Strategy section below for further details. The Action Plan will be reviewed and updated annually by the neighborhood Firewise board.
 - Update the evaluation and hazard assessment within the Elk Creek Fire Protection District CWPP for the Valley Hi subdivision.
4. Conduct a “Firewise Day” event. Several ideas for a Firewise Day would be the following:
 - Chipper-rental day. Homeowners Association agreed to pay for this rental (2013).
 - Slash pick-up day, coinciding with local fire departments slash collection days.
 - All-neighborhood work day.
5. Invest a minimum of \$2 per capita in local Firewise actions for the year.
 - Based on the 2013 neighborhood directory, it is estimated that 265 people live in 107 homes within Valley Hi Estates. That accounts to a minimum expense of \$530 per year for the entire subdivision.
 - Hours of labor worked can be counted toward this requirement at a rate of \$21.79 per hour. At this rate, 25 hours of volunteer labor would be needed annually to reach the per capita expenditures minimum expense. This hourly rate is valid for 2013/2014, and adjusts every few years.
 - Property owners will need to keep track of money and hours spent yearly on activities related to reducing the threat of wildfire on their own property. Near the end of each calendar year, the neighborhood Firewise coordinator will gather and report this information to the Colorado State Forest Service Firewise Program liaison.
6. Submit an application to your state Firewise liaison.
 - This will be completed by the neighborhood Firewise coordinator when all requirements above have been met.
 - Must be done annually to meet Firewise requirements to maintain status.

Action Plan Strategy

Action items include a variety of specific recommendations that reduce ignitability of structures, remove hazardous wildland fuels from around homes, and reduce the amount of fuels in strategic locations. Many recommended action items do not involve drastic changes to the forest; simple structural maintenance and pruning are basic but essential components to effective mitigation.

This action plan strategy follows the recommendations of Firewise Communities /USA.

- The primary focus should be the home ignition zone. This is an area within the first 30 feet of the structure. Harden your home against wildfire. This includes fences, decks, porches and other attachments. If it's attached to the house it is a part of the house. Non-flammable or low flammability construction materials—especially for roofs, decks, siding and windows—are recommended for new homes or remodeling. Remove trees that are within this zone. Keep combustible items, including pine needles and mulch out of this area. This area provides space for fire firefighting personnel and suppression efforts in the event of a fire.
- The next zone extends approximately 100 feet from your structure. Increase this distance on the down-hill side. Thin back these trees and dispose of slash and limbs promptly. Meet current defensible space guidelines from Colorado State Forest Service whenever possible. Work with adjacent property owners to treat fuels across property lines.
- Clear leaves and other debris from gutters, eaves, porches and decks. This prevents embers from igniting your home. Remove anything combustible stored underneath decks or porches. Screen or box-in areas below patios and decks with wire mesh to prevent debris and combustible materials from accumulating.
- Prune up trees so the lowest branches are 6 to 10 feet from the ground (or as high as you can safely reach). If it is dead, cut it down to reduce fire intensity. Dry trees, slash, grass and shrubs are fuel for wildfire. Dispose of these items quickly to reduce fuel for fire.
- Make sure you house can be found by emergency response individuals. Install a clearly visible house number at the end of your driveway. Make sure it can be seen when traveling either direction on the street.
- Additional actions as identified by the neighborhood Firewise board, Elk Creek Fire Protection District, or home owner.

In an attempt to focus on the most beneficial tasks to reduce the threat of fire to homes, the following list is the recommended priority of projects for our community:

1. Remove existing dead vegetation (trees, shrubs, slash, etc.) from properties. Focus on areas closest to structures and buildings, and then work outward.
2. Remove combustible material (lumber, firewood, etc.) from decks, below decks, and immediately adjacent to a structure. Firewood piles should be at least 30 feet from a structure.
3. Remove debris (pine needles, grass/shrubs, etc.) that provide a continuous bed of fuel up to a house for an advancing fire. An area of 30 feet from your house should be void of any combustible material.

4. Remove pine needles and leaves from roof tops and gutters.
5. Remove conifer (needle-bearing) trees and shrubs from within 30 feet of a structure. If a tree is left within this zone, prune it up to reduce the chance of fire climbing the limbs, and keep grasses and shrubs from becoming established directly under these trees. Deciduous (leaf-bearing) trees are typically fire resistant, so they can be left alone within this 30-foot zone.
6. Thin out trees within 100 feet of a structure. Increase this distance on the down-hill side.

Home construction techniques and practices can increase the chance of a house surviving a fire.

- Building code requires that roofs be constructed with a Class A fire resistant product.
- Siding a house in other than a wood product will reduce the probability of combustion. Options include brick, stone, stucco, cement fiber board (Hardy board), etc.
- Cover vents (attic and crawlspace) with a screen material to reduce the chance of embers entering the house.
- Build fences, decks, and porches with less combustible materials.

Neighborhood Cooperation

It is clear that if one property owner performs good vegetation reduction on their property, the overall risk level would be only marginally reduced if adjacent neighbors did nothing. Any worthwhile effort must be applied to the subdivision as a whole.

Individual homeowners are strongly encouraged to carry out the recommended actions identified in the Action Plan Strategy listed above, to the best of their financial and physical abilities. Local businesses specialize in the removal of hazard trees and reducing the threat of wildfire to your home. These businesses routinely advertise in local newspapers and magazine. The Valley Hi homeowners association does not endorse or promote any one business over another. Combining mitigation efforts by more than one property can reduce the actual costs per house by efficiencies on the part of contractors.

Expected “End-State” Condition

Annual routine maintenance will be required to maintain mitigated properties. Some trees will die and new trees will grow back. Pine needles will accumulate in gutters and around houses. Homeowners will need to maintain their property over the years to keep the fire risk minimal. Annual maintenance will keep the workload manageable, rather than waiting many years for vegetation and pine needles to accumulate to the point it becomes a fire hazard again.

The preferred outcome of the efforts of residences of Valley Hi Estates is to significantly reduce the probability of high-intensity wildfire entering or becoming established in the subdivision. By following the action items identified in the Firewise Communities program, and the Action Plan Strategy, we

will be giving firefighters a higher probability of success in protecting our property from fire, and a lower chance of houses being lost to wildland fire.

There are other additional outcomes that have been realized from fire mitigation efforts, such as:

- The homeowner insurance industry looks favorably on the Firewise Community/USA program, and may be more likely to keep you as their customer.
- Trees remaining from thinning are healthier, thus more resistant to disease and insect infestations. Trees in thinned forests are more likely to survive the effects of wildfires.
- Realtors tend to bring potential homebuyer customers into a subdivision that has the Firewise Community recognition, over subdivisions that don't have the recognition.³ Also, a 1981 study by Colorado State University showed that thinned properties were valued higher than homes located on densely forested lots.
- Your home, and the personal belongings in it, is less likely to be lost in a wildfire. Many personal items, antiques and heirlooms are impossible to replace.

Photo 1. Aerial view of Valley Hi Estates, Filings 1 & 2.



Footnotes:

1. Composite decking is a material that is a mixture of wood fiber, plastic, and some type of binding agent. Some common brand names include Trex, TimberTeck, CertainTeed, and PermaDeck. Composite decking material is not fire proof. Studies have shown that composite decking takes more of an effort to start combustion than natural wood, but once it is burning, it can burn as hot as natural wood.
2. Colorado Front Range counties for Graph 1 include: Larimer, Boulder, Gilpin, Clear Creek, Jefferson, Teller, Douglas, El Paso, Fremont, Pueblo, Huerfano, and Las Animas.
3. Realtor surveys from Montana, Arizona, New Mexico, and Wisconsin (2010).

References:

Agee, James K. (1993), Fire Ecology of Rocky Mountain Forests.

National Weather Service (2013), Rocky Mountain Area Fire Weather Annual Operating Plan.

Elk Creek Fire Protection District Community Wildfire Protection Plan (2011)

Colorado State Forest Service - Minimum Standards for Community Wildfire Protections Plans (2004)

Firewise Communities/USA website (<http://www.firewise.org/>)