WILDLAND FIRE OVERVIEW

for

DeNovo Independence Property

Blaine County, Idaho

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EXECUTIVE SUMMARY

DeNovo Independence proposes to develop 15 home sites on approximately 88 acres east of Sun Valley, Idaho. The proposed sites are in a grass-sagebrush fuel type with vegetation 1-2 feet tall in most places; there is no timber present on the site. The area has a very low occurrence of wildland fires over the past 40 years (1970 – 2009), and the fuels typically produce low to moderate intensity wildfires under all but the most extreme conditions. *FireWise* building construction standards and landscaping practices, coupled with the proposed fuel modification activities on the perimeter and defensive fire tools such as a perimeter sprinkler system , will result in an area where residents and the structures on their properties can be successfully protected from the occasional wildfire that occurs.

Introduction

The DeNovo Development Company is proposing to develop 15 home sites on approximately 88 acres east of Sun Valley in Blaine County, Idaho. The land is part of a larger accumulation of patented mining claims, and falls within the proclaimed boundary of the Sawtooth National Forest. Wildland fire protection for the private land at this time is the responsibility of the Ketchum Rural Fire Protection District. DeNovo proposes that the residential development be annexed into the City of Sun Valley.

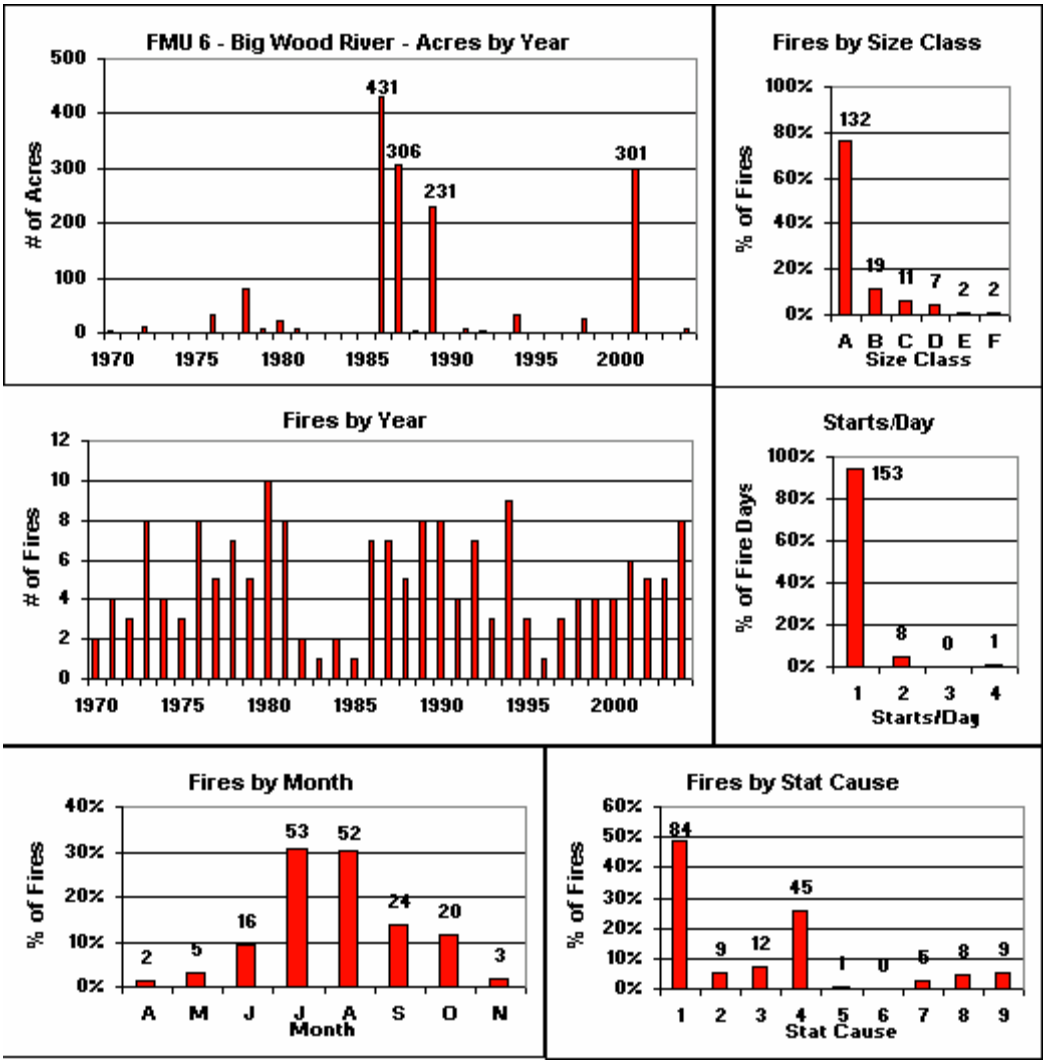
DeNovo Properties has requested Blackbull Wildfire Services of Missoula, Montana to conduct this overview of the wildland fire conditions for their proposal, and to make recommendations to mitigate identified risks and hazards to acceptable limits.

The area proposed for development is located between 6500 – 7500 feet in a grass-sage brush vegetation community that currently has no structures or other developments. Evidence of previous mining activity is apparent throughout the area, and is undergoing remediation work during the Summer and Fall of 2009.

Existing gravel roads access the area from the eastern edge of Sun Valley in the Independence Creek Road (through National Forest lands) and from the East Fork Road near the town of Triumph (see Appendix "A").

Wildland Fire History

Although the DeNovo Independence property is in private ownership, it is located within the boundaries of the Big Wood River Fire Management Unit (FMU) #06 on the Sawtooth National Forest; that FMU contains 243,424 acres (see Appendix "B") . The 35-year fire history (from 1970 – 2004) is taken from the Sawtooth National Forest Fire Management Plan, and shows the following fire history for the immediate area:



As these charts show, the area has a low incidence of wildfire occurrence, averaging about 5 fires per year: the majority of those fires (70%) are caused by lightning and campfires. Most of the fires that occurred (153 fires/83.6%) were the only fire that occurred on any given day in that Fire Management Unit. The large majority of the fires (82.5%) were controlled at one acre or less. More plainly put, the risk of wildfires is very low in this general area, and those fires that do occur have been suppressed at a small size in of large majority of the cases.

The fire history from the Sawtooth's Fire Management Plan does not, of course, include the data from the "Castle Rock Fire" west of Ketchum that burned more

than 45,000 acres in August 2007. While this fire was a significant event, it was very untypical of fires that have historically burned in the area over the past 40 years. There are also some important differences between the Castle Rock fire and the area being proposed for development on Independence: in its "Burned Area Emergency Response Plan" for the Castle Rock Fire, the U.S. Forest Service identified that of the 45,013 acres within the fire's final perimeter, 13138 acres were in the sagebrush/grassland vegetation group (29.2%). Of those sage/grass acres within the final perimeter, 6077 acres (46.3%) were unburned; 4151 acres (32.6%) burned at a low intensity; 1550 acres (11.8%) burned at a moderate intensity; and only 1360 acres (10.4%) of the sagebrush/grassland area burned at a high intensity (3% of the total fire area). It should also be remembered that during its initial stages, the Castle Rock Fire took three (3) days to reach 600 acres in size: there was adequate time for emergency notification and evacuation of area residents during the first 3 days.

A search of fire records outside the National Forest proclaimed boundaries shows little evidence of significant fire occurrence. There is one news paper report of an August 2001 wildfire in the area near the Triumph Mine that burned approximately 800 acres in a 48 hour period between Milligan and Triumph Gulches. The Blaine County CWPP map of "Historic Fires on Private Land" shows five (5) fires in the general area during the 1990 – 2003 period, including the 2001 fire near Triumph described above (see Appendix "C").

For a comparison of the Independence and FMU #06 fire situation with areas in the West that are better known for their wildfire problems, the San Diego, California fire situation shows a significantly different historical record: the San Diego area has about 2.3 million acres with a population of 491,000. From 1910 – 2004, they experienced 522 wildland fires that exceeded 300 acres in size; during that 94 year period, there were only five (5) years when a 300+ acre fire did not occur. By comparison, the Big Wood River FMU was approximately 10% the size of the San Diego area, and its 35 year history only experienced four (4) fires that exceeded 300 acres.

Records in the Blaine County Community Wildfire Protection Plan (2004) document that for the 2001 – 2003 fire seasons, there were only twenty (20) days that met the criteria to be designated "Critical Fire Weather Days": winds greater than 25 mph for any 3+ hours AND Relative Humidity is <15%. 50% of those days occurred in July and August, while the other 50% occurred in May (5%), June (10%), September (30%) and October (5%) (see Appendix "D").

Fire Suppression Capability

Between the Sun Valley FD, Ketchum City/Rural FD, US Forest Service and Bureau of Land Management in the area of the proposed development, there are numerous wildland engines and water tenders, and a helicopter rappel crew available.

The US Forest Service has Cooperative Fire Protection Agreements with the Sun Valley FD, Ketchum City FD and Ketchum Rural FD: these agreements provide that will assist each other in fire suppression efforts for the first four (4) hours at no cost to the receiving unit. Similar agreements are in place with the Bureau of Land Management (BLM). The most recent BLM "Rural Assists" report shows that Sun Valley assisted the BLM on six (6) fires during the fire season, while the BLM did not provide any fire assistance to the Sun Valley FD.

The USFS Fire Management Officer has stated that he only stations one of his wildland engines in the area because "there are lots of other resources available" in the Sun Valley/Ketchum area.

In the 2009 Addendum to the Blaine County Community Wildfire Protection Plan (CWPP), the Sun Valley Fire Department documents that all of their members complete/pass the Wildland Fire Safety Refresher, Pack Test and 16-20 hours of in-house wildland training annually. They are equipped with 15 sets of wildland Personal Protective Equipment (PPE) and 30 forest fire shelters. Their apparatus includes Type 3, Type 4 and Type 6 fire engines, a 3000 gallon water tender and associated command vehicles. Engine 60 was assigned to the wildfires in northern California during the summer of 2008 (see Appendix "E").

Wildland fire suppression response in the Independence area will be timely, given the number of resources within a 5 mile radius of any potential ignition. Access to the Independence area during the wildfire season will be on the Independence Road from the west and the Triumph Gulch Road from the south. Given the long-term historical record that shows most fires being a single ignition on any given day, there will be multiple engines available for initial attack.

FUELS AND FIRE BEHAVIOR

The DeNovo Independence area is located in a grass-sage fuel type; examples are the "Low Load, Dry Climate Grass-Shrub (GS1) and Moderate Load Dry Climate Shrub (SH2) fuel types found in the "Standard Fire Behavior Fuel Models (USFS-RMRS-GTR-153, June 2005) (see Appendix "F").

Fire behavior modeling using these standardized fuel models in the BehavePlus4 program shows flame lengths of 3 to 8 feet, with rates of spread ranging from about 400 feet per hour under moderate burning conditions to nearly 4000 feet per hour under extreme fire danger levels on 50% slopes with 8 mph mid-flame wind speeds (see Appendix "G"). As was shown in Appendix "D", critical fire weather conditions are a very infrequent event in the area.

The sage brush fuels can, under extreme burning conditions, result in rapid rates of spread and moderate flame lengths. However, compared to the kind of fire behavior exhibited on timber fires like Castle Rock, the risks and hazards of sage brush fires are significantly less. There will be areas designated as "safety zones" both in the development area and along the Independence Creek road. A "safety zone" is an area where the vegetation is cleared to provide an area where flames and fire intensity cannot cause radiant heat injuries to those occupying it. The accepted standard for a "safety zone" is that the radius of the safety zone should be 4 times (4X) the flame height. The concepts of *Firewise Landscaping* that will be incorporated throughout the Independence development will also serve to protect both the residents and the structures from the fire's intensity.

Photo 1. Typical fuels in the DeNovo Independence area.

In Chapter 3 of the State of Idaho Hazard Mitigation Plan that addresses wildland fire (page 81, dated November 2007), a Idaho-based USFS firefighter offers the opinion that "although open shrub lands and grasslands are also prone to wildfire, defending homes in these habitats tends to be less dangerous and less expensive from a firefighting perspective ".

Mapping in the 2004 Blaine County Community Wildfire Protection Plan (CWPP) shows the DeNovo Independence area with a "Moderate" Fuel Hazard Analysis ranking (see Appendix "H"). By comparison, areas north of the Independence property and south of the Parker Gulch road have been shown as "High".

Photo #2. Fuels and Terrain in the DeNovo Independence area.

FIRE IN THE WILDLAND-URBAN INTERFACE

The Wildland-Urban Interface (WUI) is that area where wildland fuels and structures either meet, or are mixed together. When structures are built as proposed in DeNovo Independence, it will fully meet the criteria of a WUI area

Residences and other structures have and continue to exist in the WUI throughout the country, the State of Idaho and within Blaine County: some have been damaged

or destroyed in wildfires, while most others have been successful in adapting to living in a fire environment. Blaine County *FireWise* reports that there are currently 2764 homes in the County at risk from wildfire.

There have been numerous studies conducted regarding the survivability or loss of structures in the WUI when threatened by wildfires. The research is consistent, and shows that building construction materials/techniques and "defensible space" are key to determining a structure's survivability.

Current research in the field shows that the one hundred (100) feet immediately adjacent to the structure is most critical to insuring its survival: if the vegetation is fire resistant, and has been modified to reduce the continuity of fuel to slow the fire's spread, then a structure's chances of surviving a wildfire are very high. Similarly, if the structure is built to prevent burning embers from entering vulnerable areas like the crawl space of the attic, survivability is also very high (see Appendix "I").

The 2008 "Oregon Trail" fire in a Boise suburban area serves as an excellent example of what can result when fire safety standards are not applied in the WUI: a grass fire, pushed by 50 mph winds, burned into the Oregon Trail subdivision, destroying 10 homes, damaging 9 others, and killing one resident. But reports from the Boise Fire Chief indicate that the grass fire moved into the arbor vitae bushes and trees that the residents had planted close to their homes, and then spot fires jumped onto the cedar shake roofs of the first homes, causing other spot fires that ignited adjacent roofs. These kinds of conditions will NOT exist in DeNovo Independence.

APPLICABLE FIRE PROTECTION STANDARDS

The City of Sun Valley follows the 2006 International Fire Code as the Standard for its fire protection requirements: the International Wildland-Urban Interface Code (IW-UIC) is a subset of that Standard that is applicable to the wildland fire situation in the DeNovo Independence area.

Chapter 4 of the IW-UIC details requirements for emergency vehicle access; water supply; and a fire protection plan for the area.

a. The fire apparatus access road must be all-weather with a minimum width of twenty (20) feet: the designed access road into the DeNovo Independence property will meet that criteria;
b. The road grade for fire apparatus access roads shall not exceed the maximum approved by the Code Official. In his testimony before the Sun Valley Planning and Zoning Commission on April 23, 2009 Fire Chief Jeff Carnes stated that he allows 10% grade for straight roads and 5-7% for curves: the road designed to access this property conforms with the Chief's criteria;
c. A water source (man-made or natural) must be located within 1000 feet of each building: the planned water system and hydrants will exceed that requirement;
d. The adequacy of water supply requires that there be a minimum 30 minute flow rate of 1000-1500 gallons per minute for One- and two-family dwellings: the planned water system will exceed those requirements;
e. A Fire Protection Plan, when required by the Code Official, must be prepared by the applicant and reviewed by the Code Official: such a plan will be prepared for the DeNovo Independence property.

Chapter 5 of the IW-UIC addresses Special Building Construction Requirements for residences and other buildings in the wildland-urban interface.

a. The Fire Hazard Severity Rating for the area is determined by a table using the Fuel Model (grass/sage), the slope (41-60%) and the days of critical fire weather frequency (2-7 days per annum, as shown in Appendix "D"). The Fire Hazard Severity Form from the IW-UIC was used to evaluate the specific conditions found in DeNovo Independence: the rating for the proposed subdivision was "LOW" (see Appendix "J");
b. Ignition-Resistant Construction standards are identified for the identified Fire Hazard Severity (Class 1,2 or 3): the construction of structures in DeNovo Independence will meet and/or exceed the requirements for Class 1 Ignition-Resistant Construction as specified;

Photo 3. Overview of DeNovo Independence property.

WILDFIRE SAFETY MITIGATION

The area proposed for residential development on the DeNovo Independence property is in the wildland-urban interface, just as are hundreds of other communities in Idaho and thousands of communities across the US. Because of the risks to those communities from unwanted wildfires, there has been extensive

research done on the measures that can successfully protect residential structures from wildfire damage and insure the safety of residents.

In order to insure the safety of residents and firefighters who may be called upon to suppress wildfires that threaten the DeNovo Independence property, detailed measures are being proposed to eliminate, reduce and/or mitigate the risks involved with wildland fire. While some of these mitigation measures are required to meet basic levels of fire protection, others are offered to enhance not only the fire safety of the DeNovo Independence area, but the overall area protected by the Sun Valley Fire Department as well:

1. Require adherence to "FireWise" building standards for all structures on the site (see Appendix "K"). These Standards will significantly reduce the risk of structural ignitions during a wildfire event by using the "best practices" concept that has been proven successful in areas where WUI fires have occurred: they include using building and roofing materials that are fire-resistant and/or non-combustible; covering openings where burning embers might enter a building; and using fire-resistant glass in windows.
2. Use "FireWise" landscaping techniques and recommended species to reduce fire ignitions and spread in the "home ignition zone". These practices will reduce the flammability of the vegetation adjacent to the structure and increase it's survivability while also offering protection for residents. It also give firefighters the "defensible space" they need to effectively protect structures.
3. Require the Resident Manager to obtain/maintain qualifications as a wildland firefighter (NWCG-FFT2). This can result in immediate and effective fire suppression should an ignition originate on the property.
4. Create and maintain a one hundred (100) foot buffer of modified vegetation around the perimeter of the Property as well as adjacent to each individual residence. Suggested techniques include mowing/feathering the sage brush to lower heights to reduce fire intensity and spread while maintain the visual character of the area. By lowering the height of the vegetation, flame lengths and intensity will be reduced, thereby insuring greater safety for both residents and fire personnel.

5. Maintain multiple access/egress routes during the summer fire season. Independence Creek and Triumph Gulch roads will offer safe access and egress under fire conditions.
6. Install a wildland fire sprinkler system around the perimeter of the area where the residences will be built. This system should be plumbed into the existing water system, and be able to be activated by the Resident Manager. An example is shown in Appendix "L";
7. Establish an on-site Fire Prevention program to inform residents and visitors of fire danger levels, restrictions, and fire safe practices. This will include signing and personal contact with residents and visitors.
8. Install a "Reverse 911" system such as "Swift911" to notify residents in the Independence area of fire ignitions or other conditions that may affect their safety;
9. Designate an approved Helispot within the development area for the delivery of aerial firefighters, as well as for use during year-round medical evacuations if needed;
10. Install a remote on-site weather station to monitor critical fire weather conditions and transmit that information to the Sun Valley Fire Department;
11. In the 2009 Addendum to the Blaine County CWPP, the Sun Valley FD identified the need for specific training and Personal Protective Equipment (PPE) during the coming years. DeNovo Independence has the capability to provide that needed training and PPE (Nomex clothing and new Generation Fire Shelters) that will enhance the suppression capabilities of the Sun Valley FD personnel on all wildland fires in the District.
12. Prepare a site-specific Community Wildfire Protection Plan (CWPP) for the Independence development in concert with the Sun Valley FD and the existing Blaine County CWPP. This will clearly identify and codify the fire situation and mitigation measures being taken.

APPENDICES

A. Area map

B. Map of Sawtooth NF Fire Management Unit #6

C. Map of Historic Fires on Private Land

D. Critical Fire Weather Days

E. Sun Valley FD in the 2009 County CWPP Update

F. Fuel Model Examples from US Forest Service RMRS-GTR-153

G. BehavePlus4 Outputs

H. Fuel Hazard map from Blaine County CWPP

I. Home Ignition Zone report

J. Fire Hazard Severity Form

K. FireWise Guidelines

L. Perimeter Sprinkler System Diagram

M. About Blackbull Wildfire